Qualifying 3-Ton Unit for Apartment Use Pg. 32

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Consulting Engineer Viewpoint

Council Concerned with Restricting Practice to Qualified Individuals

By Phil B. Redeker

CHICAGO — Consulting engineers as a group, and thinking and acting collectively, are primarily concerned now with the improvement and enforcement of laws restricting the practice of engineering to those individuals properly qualified, to combatting encroachments on their field by employes of government agencies, and to raising the ethics and standards of practice of their profession.

Presently, although still keeping a watchful eye on it, they do not seem to be as concerned as they were a year or two ago with what they term the practice of "free engineering" by manufacturers, large contractors, and others who may attempt to furnish engineering service along with the product or service they offer for sale.

Also, relationships of consulting engineers with architects and contractors seem generally to be on the upgrade, and more contact by representatives of organizations representing these various elements in the field are taking place and being planned.

The above outlines what seemed to be the most newsworthy results of the actions and discussions that came out of the recent annual board of directors meeting of The Consulting Engineers Council, a national federation of state and regional associations of consulting engineers.

The board members at the meeting represented 32 associa-

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Bid Registry

Detroit Groups Study 'Successful Plan'

By Phil B. Redeker

DETROIT — A bid registry plan used on bids for an $800,000 institutional building project here has given rise to the belief that such a plan can be successfully used by the construction field generally in this area.

Instigator of the bid registry plan is the firm of Harley, Ellington, Cowin & Stirton, Inc., a major Detroit architect-engineer organization, which took bids on a University of Detroit faculty building budgeted for

(Continued on Page 8, Col. 4)

Balthrop Named Airtemp President

DAYTON — The appointment of William P. Balthrop as president of Chrysler Corp.'s Airtemp Div. was announced by Charles B. Gorey, Jr., group executive - Special Products.

Balthrop

Balthrop succeeds P. M. Augenstein who has resigned to accept an executive position with another company.

Balthrop, 41, was graduated from the University of Tennessee and has a master's degree in engineering. He joined Chrysler Corp. in 1944 as a graduate student engineer and has held many positions of responsibility

(Continued on Page 8, Col. 5)

FHA To Accept Mfr.'s Own Label on Rating, Testing

Industry Must Develop Plan by May 1, 1962

WASHINGTON, D. C.—Another change in the requirements for labeling unitary air conditioning equipment for use in FHA-insured homes has been made in a letter to its field offices just issued by the Federal Housing Administration.

There are two principal changes in the ruling now in effect. The first is that a manufacturer's own label is now acceptable as evidence that the model of unitary equipment has been properly tested and rated. The other principal point is that the present revision will remain effective until May 1, 1962. In the intervening period the industry is "to develop a testing and labeling program acceptable to FHA which will provide satisfactory assurance that each unitary air conditioning model conforms to the appropriate standard."

The directive (No. 1846) to all field offices stated that "this letter is to inform all field offices of a change in paragraph 1004-5.1 of the Minimum Property Standards as outlined in Letter No. 1843" and it reads:

"Delete the change shown for paragraph 1004-5.1 a and substitute the following:

"'a. Compliance with the above will be evidenced by an ARI, AGA, or manufacturer's label displayed on Unitary Air Conditioning Equipment (not including room air conditioners or heat pumps). FHA will construe such labeling as certification by the manufacturer that the model of the equipment has been tested and rated in conformance with ARI Standard 210 or 250.'

"In lieu of labels, certification

(Continued on Page 35, Col. 4)

Augenstein Joins American-Standard

NEW YORK CITY — The election of Paul M. Augenstein as an executive vice president of American-Standard was announced by Joseph A. Grazier, president.

Augenstein

In this position, Augenstein will direct the activities of the company's home equipment and industrial products divisions in the United States.

Prior to joining American-Standard, Augenstein was president of the Airtemp Div. of Chrysler Corp., a position he held since 1958.

His business experience also includes 23 years with the General Electric Co. in Nela Park (Cleveland), Bridgeport, Conn., and Louisville, Ky., where he served in a variety of marketing and general management functions for major appliances, including dishwashers, food waste disposers, and air condi-

(Continued on Page 35, Col. 5)

Cooling Field Seen as Economic Bright Spot

HOT SPRINGS, Va.—The air conditioning and refrigeration industry continues to be a bright spot in the nation's overall business picture, its leaders agreed here recently, surveying the final figures for 1960 and preliminary reports for the current year.

While gains have not been so spectacular as in some of the early years of the '50's, when the industry was feeling the effects of the post-war boom, it has continued to show progress over a period when many other segments of the economy have suffered set-backs in varying degree.

This was pointed out by R. K. Serfass, president of the Air-Conditioning & Refrigeration Institute, whose board of directors held a two-day session here to lay plans for institute activities during the coming season.

In the field of unitary air conditioning, which includes all central residential equipment, as well as some smaller commercial and industrial applications, manufacturers' shipments in 1960 totaled some 336,000 units, an increase of about 10% over the 1959 figure. More than 60%, or about 215,000 of these went into residential installations, the institute estimates. Shipments in the first quarter of 1961 are

(Continued on Page 35, Col. 1)

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Room Unit Shipments Running Ahead of '60

DETROIT — Total industry sales of manufacturers of room air conditioners continue to run ahead of year-ago periods, according to statistics released by the National Electrical Manufacturers Association.

NEMA estimates that sales in March totaled 224,100, up 6.3% from the 210,900 units sold in March, 1960. For the first three months of 1961, sales ad-

(Continued on Page 35, Col. 2)

Zinc Coated Steel Usage Sets Record

NEW YORK CITY—Growth of the air conditioning and heating industry is reflected in figures compiled by the American Iron & Steel Institute on shipments of galvanized steel sheets last year.

A record tonnage of zinc-coated sheets was shipped directly to users for commercial

(Continued on Page 35, Col. 2)

Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Pause That Refreshes

Slogans are among the most ancient of human inventions.

Two thousand years ago, when the Rome-Carthage "arms race" had the ancient world agog, a Roman senator named Cato the Elder concluded each of his speeches with the ringing words: "Carthage must be destroyed" *(delenda est Carthago)*.

After lending their ears to this sort of thing for awhile, Romans finally took the hint and laid waste the rival city of Carthage.

No cause has lacked its rallying cry. "God wills it!" echoed through Europe in 1095 when Crusaders moved toward the Holy Land to wrest it from the Moslem Arabs.

"St. George for England!" yelled the British as they faced their French enemies. "St. Denis for France!" countered the Gallic opposition, flinging the name of *their* national patron saint into the rat-race.

Bellowed names of Scottish Highland clans (as their members rode into battle) actually were the first expressions to be called "slogans." The word derives from the Gaelic *sluagh* (army) and ghairm (outcry).

More recent conflicts also have yielded war cries. "Remember Pearl Harbor" . . . as your grandfather remembered

(Continued on Page 14, Col. 1)

$2 Million Westinghouse Expansion Set To Start In Staunton In July

STAUNTON, Va.—A $2 million expansion program which will include the construction of three new additions to the company's plant here has been announced by Raymond K. Serfass, general manager of the Westinghouse air conditioning division.

Work on the new facilities is scheduled to get under way in July.

A major segment of the addition will be the construction of approximately 55,000 sq ft of warehouse space. This new building will be added at the north end of the present plant.

The second part of the expansion will be the addition of about 44,000 sq ft of new manufacturing area adjacent to the present main plant building. This new area will be used for the manufacture of heavy air conditioning equipment.

At present the division manufactures large equipment inside the main plant building. Areas vacated by moving this heavy equipment to the new facility will be used to manufacture small hermetic compressors.

A third part of the expansion program is the erection of a new single-story office building adjacent to the existing engineering laboratory. This new building will make it possible to consolidate all the division's engineering, drafting, laboratory, and model shop personnel.

Bell & Gossett Dividend

MORTON GROVE, Ill.—The board of directors of Bell & Gossett Co. recently declared a regular quarterly dividend of 17½ cents per share on the company's common stock.

Worthington Purchases Century Ventilating Line

MILWAUKEE — Worthington Corp. has purchased the product line of the Century Fan & Ventilating Co. of Torrington and Stamford, Conn.

The line consists of industrial and commercial roof-top power ventilators and fans, in addition to many types of blowers and exhausters.

All manufacturing operations of the newly-acquired line will be handled by the Mueller Climatrol Div. plant in Milwaukee. Sales of the new product line will be handled by the Worthington Air Conditioning Div.

2,000th Carrier Absorption Unit Goes To National Biscuit Co. Factory

THE 2,000th absorption refrigeration machine made by Carrier is christened by Mrs. L. Logan Lewis, wife of one of the founders of the company, as Mr. Lewis (center) and company president Russell Gray look on. The water chiller, which weighs 40 tons and is almost as long as a railroad freight car, is said to be the largest of its kind ever built.

CHICAGO—The rapid growth of the air conditioning industry will be emphasized here in May with the installation of the 2,000th absorption refrigerating machine produced by Carrier Air Conditioning Co. in the National Biscuit Co. plant at 7300 S. Kedzie Ave.

Carrier noted that production of the 2,000th machine comes only 14 years after it built the first of these large-capacity heat-generated water chilling units for use in cooling big buildings.

The new machine will have a cooling capacity of 1,000 tons and will be installed with two identical units, thus giving Nabisco one of the largest factory air conditioning systems in the country designed expressly for worker comfort.

The triple-unit system will be used to maintain comfortable conditions in the huge packaging area where employes are concentrated. The units also will cool an addition to the plant which will be completed in 1962 and will add 600 bakery employes to the current 2,400.

Improved working conditions for plant employes was the prime reason given by National Biscuit for the air conditioning installation, according to William S. Bodinus, Carrier midwestern regional manager.

Bodinus said many plant managers have recently discovered that comfort air conditioning of factories results in greater production, less absenteeism, and improved quality. He noted that a survey of 19 plants in different kinds of industries recently showed that increased annual returns from these benefits ranged from 20 to 126%.

Bryant Branch To Serve Louisiana, Mississippi

INDIANAPOLIS — Bryant Mfg. Co. has established a branch operation serving Louisiana and Mississippi.

This territory was formerly handled by Bryant-Leaumont Co. of New Orleans and the Dykes Co., Inc., of Shreveport. The newly formed branch will continue at the former Bryant-Leaumont location, 2836 Frenchmen St.

Named to manage the New Orleans branch is Max N. Pleasant.

York Reassigns Haloran

YORK, Pa.—Richard J. Halloran, vice president and manager of the Decatur Works of the York Div. of Borg-Warner Corp., has been placed on special assignment for the president's office of York Div.

During Halloran's assignment, the Decatur Works will be under the supervision of C. C. Lewis, vice president and director of manufacturing, engineering, and procurement.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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3 Affiliated Kansas and Missouri Firms Employ 'Scare' Tactics, FTC Complains

WASHINGTON, D. C. — The Federal Trade Commission recently issued charges that three affiliated Kansas and Missouri concerns have used "scare tactics" and other unfair tactics to sell their furnaces, heating equipment, and parts and to get repair jobs.

Cited in an FTC complaint are The Davis Furnace Co., Inc., Kansas City, Mo.; The Davis Furnace Co. of Independence, Inc., Independence, Mo.; Kansas Furnace Co., Inc., Kansas City, Kan.; and their officials, Ralph L and Paul Davis.

According to the complaint, the companies use purported offers of free inspection or low cost cleaning services to get into the homes. Their salesmen and servicemen allegedly "misrepresent themselves as engineers and misinform the homeowner that his furnace or heating equipment is defective, not repairable, or is dangerous to use."

These employes, the complaint continues, dismantle furnaces and then refuse to reassemble them or leave them unassembled for long periods of time. They allegedly misrepresent that reassembling and continued use of the equipment will result in gas poisoning, asphyxiation, or fires.

The complaint charges that these deceptive practices have caused many homeowners to discard useful furnaces prematurely and to either purchase new heating equipment and parts or contract for extensive but unnecessary repairs. The result is that trade is diverted unfairly from respondents' competitors in violation of the FTC Act, the complaint charges.

The respondents are granted 30 days in which to file answer to the complaint.

Wolverine Tube Names Kulaw

ALLEN PARK, Mich. — The appointment of C. B. Kulaw as advertising supervisor was announced by H. A. Harty, manager of advertising and sales promotion for Wolverine Tube, division of Calumet & Hecla.

Kulaw, who replaces J. M. VanWagoner, comes to his new position with extensive purchasing and credit background obtained during his 12 years' association with Wolverine Tube.

Defense Dept., Schools Among Top D-H Cooling Customers In 1960

LOS ANGELES — The U. S. Dept. of Defense and schools were among the largest purchasers of air conditioning equipment from Drayer-Hanson Div., Hi-Press Air Conditioning of America, Inc., according to a survey of 1960 calendar year.

The survey was initiated shortly after the December merger of Drayer-Hanson with Hi-Press.

Government military purchases accounted for approximately 10.1% of the total, and schools were responsible for an estimated 12.16%.

Other types of jobs which made good showing on the list were shopping centers, long top purchasers, with 24.3%, and office buildings, with 12.7%. Plants and factories, it was indicated, are the biggest potential purchasers, along with public utilities, for the coming year.

Missouri-Kansas Furnace Denies FTC Charges

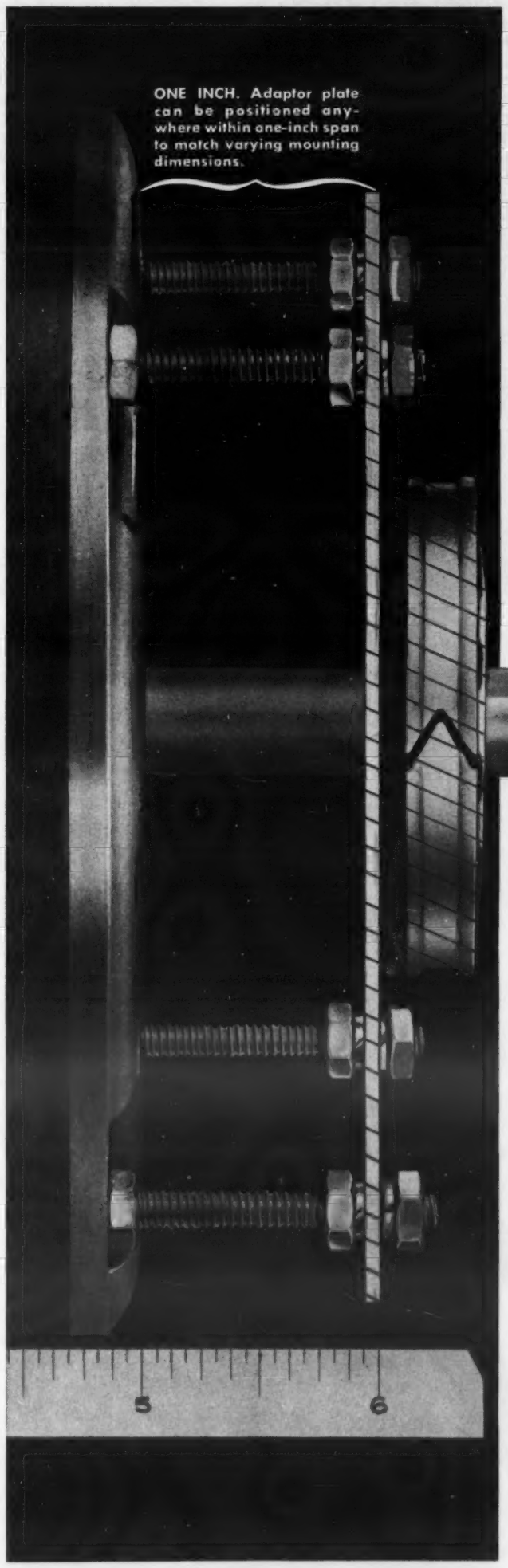
WASHINGTON, D. C.— Missouri-Kansas Furnace Co., Kansas City, Mo., has filed a denial answer to Federal Trade Commission charges of using "scare tactics" and other deception to sell furnaces, heating equipment, and parts.

In a complaint issued April 5, the commission charged that the concern's salesmen and servicemen, posing as engineers, obtained entrance to homes through a deceptive offer of free inspection or low-cost servicing of heating plants. The agents then misrepresent that the heating plants installed in the homes are defective, not repairable, and are dangerous to use, the complaint said.

In addition, the complaint asserted that the agents have dismantled furnaces and then refused to reassembled them, or have left them unassembled for long periods of time, on the pretense that continued use of the equipment would result in asphyxiation, carbon monoxide poisoning, fires, or other damage.

The use of these practices has caused many homeowners to purchase new heating equipment prematurely or to contract for extensive but unnecessary repairs to existing equipment, the complaint alleged.

The company categorically denies the charges.



New motor with adaptor rings, mounting adaptor

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Consulting Engineers Council--

(Continued from Page 1, Col. 2)

tions, with well over 1,000 individual members in the council. Membership is comprised of consulting engineers registered in private practice and operating generally in the fields of civil, structural, and mechanical and electrical engineering.

Wisconsin Law Cited

In the matter of prosecuting more vigorously the matter of barring unlicensed engineers from professional practice, reports were heard of a step-up in actual court action in such matters. One of the most interesting was a lawsuit instigated by The Consulting Engineers Institute of Wisconsin whereby a municipal judge found a Madison "consultant" guilty of practicing engineering without a license, and imposed the fine.

The defendant had drafted plans and supervised installation of a new heating and ventilating system for a school building, and charged a fee of 4% of the total cost of the contract. The interesting part of the case was that even though the school board expressed complete satisfaction with the job, the judge ruled that this was immaterial, observing that "the public would not want standards for the medical profession measured by the work of an amateur who may have performed a successful operation."

It also came to light that recent developments had made the situation with respect to Michigan and Ohio statutes covering registration of architects and engineers even more confusing. Earlier this year, as reported first in the NEWS, a Federal district court judge had ruled the Michigan and Ohio laws unconstitutional. The Federal court's ruling was appealed, but before the appeal could be heard, a settlement was reached out of court.

Mich. Case Up In Air

There is some legal opinion to the effect that in such instances, any court ruling made in such lawsuits cannot be taken into consideration in future court cases. However, engineering groups in Michigan and Ohio are said to be preparing amended versions of the law for consideration by the state legislatures.

The model law committee of the CEC, reporting to the board of directors, recommended the adoption of the proposed model law revision prepared by the South Carolina State Board. Because of the current high degree of interest in registration laws, this proposed model law revision is presented in its entirety. Quoting:

"The right to engage in the practice of engineering shall be deemed a personal right, based on the qualifications of the individual as evidenced by his certificate of registration, which shall not be transferable. Any registered professional engineer may practice his profession individually or through a partnership, joint stock company, or corporation, as agent, employe, officer or partner, provided he shall be individually liable for his professional acts and provided further that the partnership, joint stock company, or corporation through which he renders such engineering services, shall be jointly and severally liable with such individual registered professional engineer, and further provided, in the case of such corporations, that: the majority of the shares of the corporation's voting stock shall be owned by individual registered professional engineers, and the majority of the directors and of the officers shall be registered professional engineers.

"The individual engineers in responsible charge of the practice of engineering shall be registered in this state, and all final plans, designs, drawings, specifications, and reports involving engineering judgment and discretion, when issued, shall bear the seal and signatures of the registered professional engineers who are in responsible charge. A corporation engaged primarily in manufacturing or mining, or other extraction of raw materials from the earth, or processing of materials, may provide engineering data incidental to the manufacture and sale of their product."

Who Handles Electrical?

Another report of significance to the air conditioning industry was that of the Standards of Performance Committee, charged with developing "basic standards of work which should normally be included on mechanical and on electrical drawings and in specifications describing such work as related to construction projects." The committee said it concentrated its initial efforts "on one problem that seems to be universal —the coordination between electrical and mechanical work. After meeting with the Electrical Contractors Association and Mechanical Contractors Association, it was offered the following conclusions:

"In general, all electrical wiring including control wiring, should be furnished and installed by the Electrical Contractor. Electrical temperature control wiring required for an alternate to pneumatic controls should be the responsibility of the Mechanical Contractor.

"The Mechanical Contractor should be responsible only for additional or revised electrical wiring required to be installed on the job as a result of equipment substituted by the mechanical contractor.

"All electrical wiring including control wiring should be shown on the electrical drawings. Ladder type electrical control diagrams are beneficial.

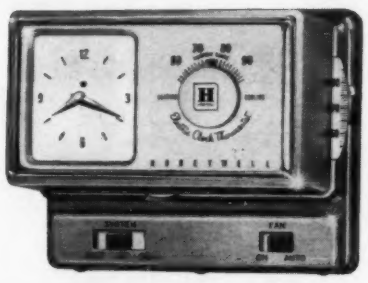
"All items of control equipment which are normally furnished by the Mechanical Contractor and have electrical connections should be specifically designated.

"All starters should be tabulated on electrical drawings, listing all characteristics."

Manual of Practice

The "Manual of Consulting Engineering Practice" which the CEC introduced last year, comprising recommended methods and principles of practice in the conduct of consulting engineering practice, proved highly popular and has gone into a second edition. Also, it has been decided to "keep the manual current" through periodic revisions and additions.

Considerable discussion was generated on a policy for distribution of the manual. Consensus seemed to favor the establishment of individual policies by the associations who



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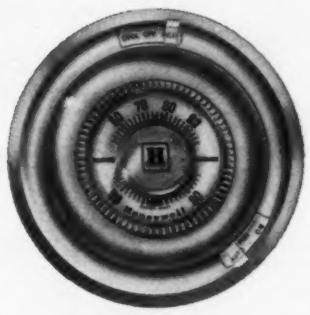
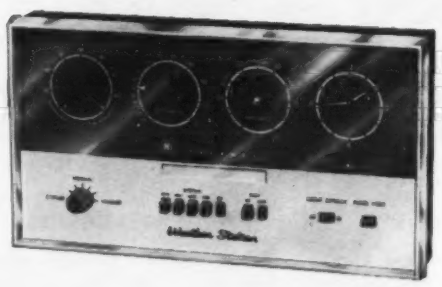
Electric Clock Thermostat



On every modernization job . . .
SELL-UP to the Honeywell
Year-Round Thermostat



For all quality new construction . . .
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SELL-UP to the Honeywell
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MAKE EVERY AIR CONDITIONING CALL PAY—

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SINCE 1885

make up the council, with a good probability that distribution of subsequent revisions and additions will be limited to paid up members.

The matter of "competitive bidding" is a sticky one for the consulting engineer, as it is for other elements in the construction trade. One of the first steps a consulting engineer should take when becoming involved in any job, it was pointed out, is to determine who has the prime responsibility for the job—the owner, architect, or engineer.

A committee reporting on the subject pointed out that since the consulting engineer considers himself to be a professional man, he should shy away from any bid competition, and should point out to clients and prospective clients that they should not request bids.

On a poll taken on the question of whether or not a consulting engineer should respond to an advertisement to a bid for services, a majority of the vote was against this practice, although there were some "yes" votes.

"In many instances proposals of some sort, including an estimate of fees, seem reasonable and necessary," said the committee chairman in describing the dilemma. "What is negotiation and what is bid shopping? These are areas in which we should try to provide some standard of guidance, but the individual must also react on the basis of his own standard of ethics."

'Free Engineering' Hit

"Free engineering," a subject which at previous CEC meetings has drawn some heated comment, got little attention at the recent meeting. A committee report reiterated the CEC stand against "free engineering," generally described as those instances in which a manufacturer or a contractor provides engineering services without a fee for the same being stipulated. Manufacturers who have issued specific statements of policies disavowing any offers of free engineering service were commended.

One special committee report covered a proposal on a manufacturers' catalog index, recommending the establishment of an index system by manufacturers and trade associations which would classify literature by a numbering system which consulting engineers can use to index their own files. The AIA system used for such purposes is not satisfactory for engineers, it was stated.

One problem which currently confronts consulting engineers is that of obtaining professional liability insurance. One major U.S. casualty firm that handled such business will no longer write such insurance. Currently there is apparently only one domestic firm, and Lloyd's of London, active in this field.

In the area of relationships with contractors, a CEC committee stated that "we believe that the majority of the problems that arise between engineers and contractors are the result of misunderstandings of procedure and aims as practiced by the various people involved in the project, beginning with the determination of the need for the project and ending with it being placed in service. These misunderstandings can be reduced through discussion among all segments of the industry and following standardized procedures.

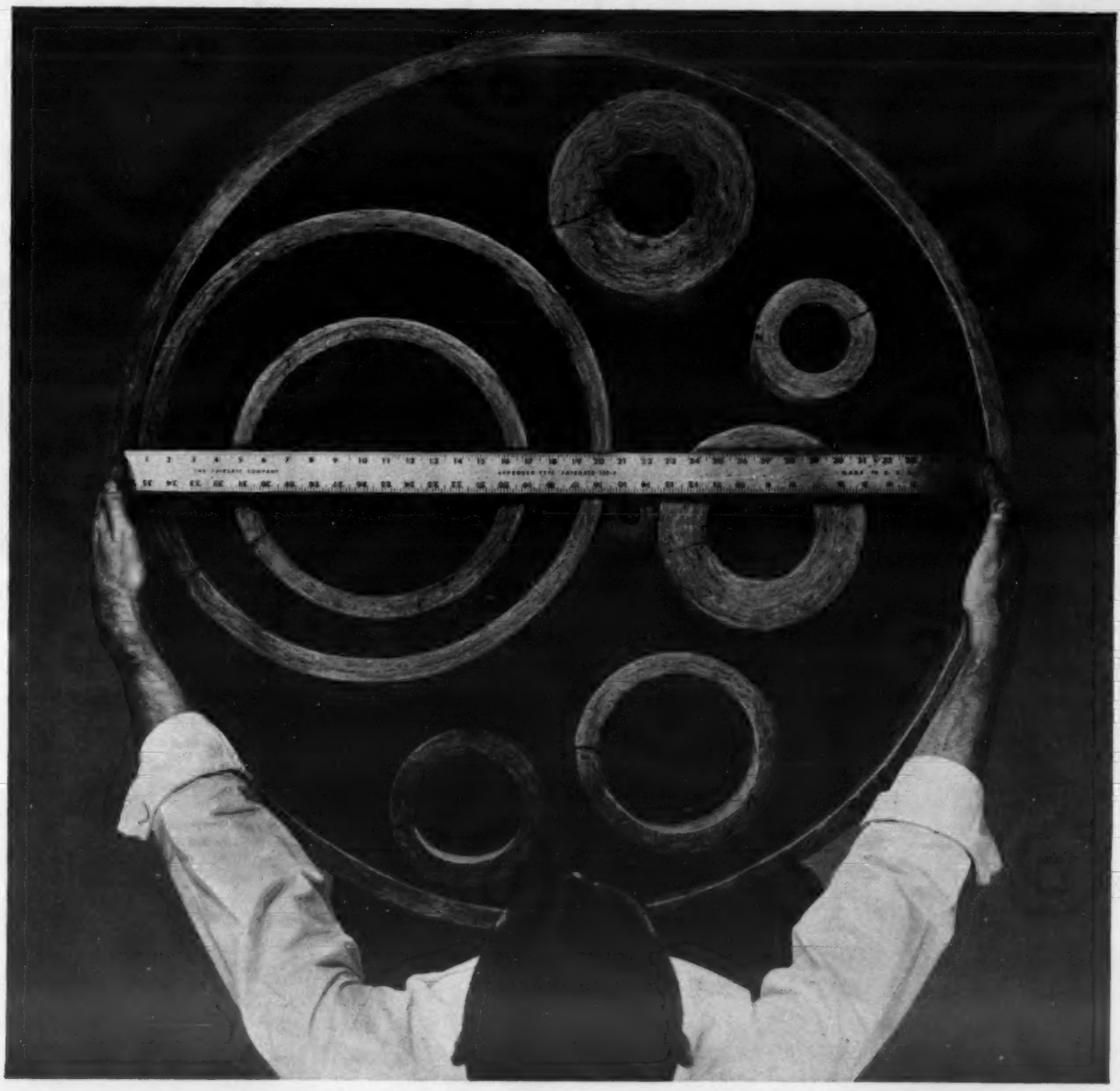
Manual of Procedure

"The Council is, through joint committee work, preparing a 'Manual of Procedure' covering the project from the time of realizing the need for the project, professional guidance in preliminary planning, financing, design, construction contract bidding or negotiation, construction and placing in operation."

A major concern of the CEC is with the encroachment of government bureaucracy in the field of engineering. This has many ramifications and the Council has a "free enterprise" committee which keeps a close watch on specific activities of Federal, state, and local government agencies which compete with their field of endeavor. The CEC general aims and policies in this regard were summed up in a statement by Hueston M. Smith, retiring president of the Council:

"Members of CEC believe that engineers in private practice should be used on all government work other than in those areas of activity where the use

(Continued on Page 8, Col. 1)



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BRIDGEPORT, Conn., Robert A. Keasbey Co., Inc.
BRUNSWICK, Ga., Baker Bros., Inc.
BUFFALO, N. Y., Industrial Insulation Sales, Inc.
BURLINGTON, Vt., Pipe Insulators, Inc.
CHAMPAIGN, Ill., The Lewie-David Co.
CHARLESTON, S. C., Baker Bros., Inc.
CHARLESTON, W. Va., Asbestos & Insulating Co.
CHARLOTTE, N. C., D & B Insulation Co.
CHICAGO, Ill., E. C. Carlson Co.
Culberg Asbestos & Cork Co.
CHRISTOPHER, Ill., Hoe Supply Co.
CINCINNATI, Ohio., R. E. Kramig Co.
CLEVELAND, Ohio, Ohio Asbestos & Insulation Co.
COLUMBUS, Ohio, Santeler Brothers; Culberg of Ohio
CORPUS CHRISTI, Tex., Precision Insulation Co.
DALLAS, Tex., Acme Insulation & Supply Co.
DAVENPORT, Iowa, Republic Electric Co.
DAYTONA BEACH, Fla., B & F Insulation Co.
DECATUR, Ill., The Lewie-David Co.
DENVER, Colo., Plateau Supply Co.
DES MOINES, Iowa, Iowa Asbestos Company, Inc.
DETROIT, Mich., The Walter Rankin Co.
ERIE, Pa., Laco-McMullen Co.
EVANSVILLE, Ind., Geo. Koch Sons, Inc.
FALCONER, N. Y., Laco Roofing
FT. SMITH, Ark., Ball Distributing & Engineering Co.
FT. WAYNE, Ind., M. H. Hilt, Inc.
FT. WORTH, Tex., Bracken Co.
GAINESVILLE, Fla., Baker Bros., Inc.
GRAND RAPIDS, Mich., M. S. Knee Co.
GREENSBORO, N. C., Starr Davis Co., Inc.
GULFPORT, Miss., Paine Supply Co.
HONOLULU, Hawaii, Parker Fallis Insulation Co., Inc.
HOUSTON, Tex., Precision Insulation Co.
INDIANAPOLIS, Ind., Lyon Lumber & Supply Co.
JACKSON, Miss., Paine Refrigeration Supply Co.
JACKSONVILLE, Fla., Baker Bros., Inc.
Eckles Distributors, Inc.
Reynolds Aluminum Supply Co.
JOPLIN, Mo., Joplin Cement Co.
KANSAS CITY, Mo., Central Supply Co.
Insulation & Acoustical Specialties, Inc.
Kelley Asbestos Prod.
KEWANEE, Ill., Mechanical Insulation Co., Inc.
KINGSPORT, Tenn., Willis Supply Co.
KNOXVILLE, Tenn., Willis Supply Co.
LAKE CHARLES, La., Coburn Supply Co., Inc.
Solar Supply Co.
LOS ANGELES, Calif., Accurate Insulation Co., Inc.
Western Fibrous Glass Products Co.
LOUISVILLE, Ky., General Insulation & Roofing Co.
MACON, Ga., Industry Insulation Co.
MARIETTA, Ohio, Asbestos & Insulating Co.
MEMPHIS, Tenn., Gibbons Supply Co.
MIAMI, Fla., Reynolds Aluminum Supply Co.
Southern Metal Products Co.
MILWAUKEE, Wisc., F. R. Dengel Co.
MINNEAPOLIS, Minn., Asbestos Products, Inc.
MOORHEAD, Minn., Fargo-Moorhead Insulation Co.
NASHVILLE, Tenn., Reynolds Aluminum Supply Co.
NEWARK, N. J., Eastern Steam Specialty Co.
Robert A. Keasbey Co., Inc.
NEW ORLEANS, La., Eagle Asbestos & Packing Co.
NEW YORK, N. Y., Eastern Steam Specialty Co.
Robert A. Keasbey Co., Inc.
ODESSA, Tex., Western Chemical & Supply Co.
OKLA. CITY, Okla., Ball Distributing & Engineering Co.
OMAHA, Nebr., Cardinal Supply & Mfg. Co.
ORANGE, Conn., Insulation Supply Co.
ORLANDO, Fla., Baker Bros., Inc.
PADUCAH, Ky., Triangle Insulation Co.
PHILADELPHIA, Pa., John F. Scanlan, Inc.
PHOENIX, Ariz., Williams Insulation Co.
PITTSBURGH, Pa., Dravo Corp., Keystone Div.
PORTLAND, Me., Eastern Glass Co.
PORTLAND, Ore., Western Fibrous Glass Products Co.
RALEIGH, N. C., Reynolds Aluminum Supply Co.
RAPID CITY, S. D., Robbins & Stearns Wholesale
RICHMOND, Va., Reynolds Aluminum Supply Co.
ROANOKE, Va., C. E. Thurston Co.
ROCHESTER, N. Y., J. F. Burnett, Jr., Inc.
ROCKFORD, Ill., Mott Brothers Co.
SACRAMENTO, Calif., The Brookman Co.
SALT LAKE CITY, Utah, Bullough Asbestos Sup. Co.
SAN ANTONIO, Tex., San Antonio Machine & Supply Co.
SAN DIEGO, Calif., Western Fibrous Glass Products Co.
SAN FRANCISCO, Calif., Western Fibrous Glass Prod. Co.
The Brookman Co.
SAVANNAH, Ga., Baker Bros., Inc.; The Brower Co.
Reynolds Aluminum Supply Co.
SEATTLE, Wash., Western Fibrous Glass Products Co.
SHREVEPORT, La., Frith Sales Co.
SOMERVILLE, Mass., Insulation Products, Inc.
ST. LOUIS, Mo., Refrigeration Supplies, Inc.
The Stovey Company, Inc.
ST. PAUL, Minn., Asbestos Products, Inc.
SYRACUSE, N. Y., Burnett Process, Inc.
TALLAHASSEE, Fla., Baker Bros., Inc.
TAMPA, Fla., Eagle Roofing & Art Metal Works, Inc.
TULSA, Okla., Ball Distributing & Engr. Co.
TUPELO, Miss., Paine Supply Co.
VALDOSTA, Ga., Baker Bros., Inc.
WASHINGTON, D. C., Walter E. Campbell Co., Inc.
WAYCROSS, Ga., Baker Bros., Inc.
WEST PALM BEACH, Fla., Southern Metal Prod.
WICHITA, Kans., Wichita Sheet Metal, Inc.
4-27-61

300 Expected at Ark-La-Tex Shield Licensing Dinner

SHREVEPORT, La. — Upwards of 300 individuals are expected to participate in the official licensing of the Ark-La-Tex Indoor Comfort Bureau here at a dinner-meeting in the Crystal ballroom of the Washington-Youree hotel, Thursday, May 18.

Featured speaker at the launching will be Claude Kirkpatrick, director of the Louisiana Public Works Dept. Also on the program will be Mayor Clyde Fant, who has proclaimed the period of May 18 through May 24 as "Silver Shield Week."

The bureau will be licensed at the civic banquet by the National Warm Air Heating & Air Conditioning Association. Representing the association will be Clyde H. Wilkinson, president of the Air Conditioning Div. of American-Standard and a member of the board of trustees of NWAHACA.

Also on the program will be J. Robert Welsh, president, S. W. Electric Power Co., and Jake Cameron, mayor of Bossier.

This is the first Silver Shield bureau to be licensed in Louisiana and 13th in the nation.

Approximately 20 heating men from the area who attended a 12-week technical training course will receive certificates of eligibility.

Officers of the newly-formed bureau are Durward Aiken, president, Dixieaire Air Conditioning Co., Inc.; Heber E. Long, executive secretary, Shreveport Association of Residential Air Conditioning & Heating Contractors, Inc.; and Herman L. Meyer, secretary, Radalec, Inc.

Active members of the bureau are Taylor Barnes, Bar-Brook Mfg. Co.; A. B. Black, Jr., Blackie's Tin Shop; Frank Campisi, Comfort Air Conditioning; J. L. Jackson, Frigeration Service Co.; J. L. Sanders, Pioneer Heating; and H. E. McLain, Sunset Sheet Metal & Heating.

Martinsville, Va. To Hear Silver Shield Program Story May 15

MARTINSVILLE, Va. — A meeting has been scheduled for Monday evening, May 15, in the Patrick Henry school here for presentation to area heating and air conditioning dealer-contractors of the story of the Silver Shield Program.

Cooperating with the National Warm Air Heating & Air Conditioning Association is a Silver Shield Action Committee consisting of:

David N. Rogers, Prillaman & Pace Heating Co., Martinsville; James H. Lowe, Superior Heating & Air Conditioning Co., Danville; Howard Frost, Virginia Blower Co., Collinsville; Paul Richardson, Richardson & Hodges, Martinsville; Eugene Oaks, Washington Heating Co., Martinsville; and Edwin E. Pace, Prillaman & Pace Heating Co.

Trane Announces 5 Appointments In Heating, Cooling, Ventilating Sales

LA CROSSE, Wis.—Five appointments were announced by A. C. Menke, Trane Co. vice president of air conditioning, heating, and ventilating sales.

Wasserman

Edgar A. Cline, formerly sales manager, heating and ventilating, has been named to a new post — manager, training. Cline will be responsible for developing and supervising the company's training programs, including those for sales office managers, field salesmen, and packaged equipment dealers.

Wesley W. Wright succeeds Cline as sales manager, heating and ventilating. Wright was formerly manager, CenTraVac sales department.

He is succeeded in that post by Donald W. Munson, who has been with the UniTrane-Absorption sales department as sales engineer.

E. A. Cline

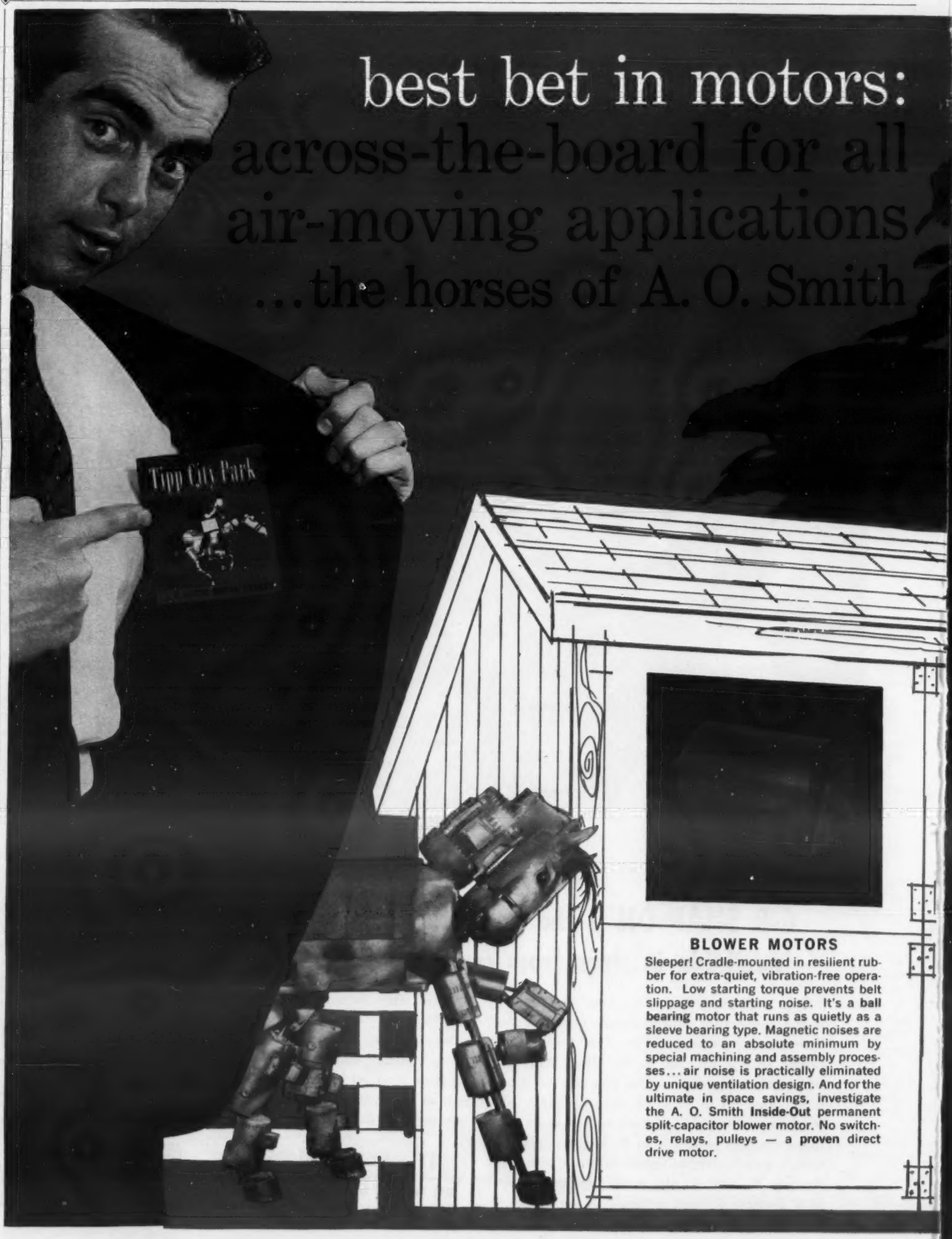
W. W. Wright

D. W. Munson

V. E. Bushnell

Vernon E. Bushnell has been named manager, Absorption sales department — "a newly-created position required by the success of the Trane Absorption Cold Generator, introduced last year," the company said.

Bushnell was formerly manager, Convector Products sales department. That post is now filled by Arthur L. Wasserman, Jr., who worked as sales engineer in the unit ventilator sales department — where he's been an assistant.


best bet in motors:
across-the-board for all
air-moving applications
...the horses of A. O. Smith
Tipp City Park
BLOWER MOTORS
Sleeper! Cradle-mounted in resilient rubber for extra-quiet, vibration-free operation. Low starting torque prevents belt slippage and starting noise. It's a ball bearing motor that runs as quietly as a sleeve bearing type. Magnetic noises are reduced to an absolute minimum by special machining and assembly processes... air noise is practically eliminated by unique ventilation design. And for the ultimate in space savings, investigate the A. O. Smith Inside-Out permanent split-capacitor blower motor. No switches, relays, pulleys — a proven direct drive motor.

94-Page Arkla Comfort Guide Manual Simplifies Calculation of Heating and Cooling Loads

THREE-ELEMENT heating and cooling load estimating package, being offered by Arkla Air Conditioning Corp., includes from left to right: pad of estimating forms, Comfort Guide manual, and psychrometric chart.

LITTLE ROCK, Ark.—Arkla Air Conditioning Corp. announced that it has developed a simplified method of heating and cooling load calculating whereby such data as glass, shading, and latitude factors are combined in easy-to-read tabular form.

The new "Arkla Comfort Guide" manual is part of a three-element load estimating package which also includes a companion pad of 50 heating and cooling load estimation forms and the Arkla psychrometric chart.

In the 94-page Comfort Guide manual, summer load factors are combined in a single table for each principal kind of window glass. For example, the factors for single and double ⅛-in. common window glass, single and double regular plate glass and heat absorbing glass, for various facings and times of day are given for each of eight kinds of shading (shades half-drawn, shades or drapes fully drawn, fully-shaded overhang, skylight, etc.).

There's a table for each of five geographic zones—30 to 50° of latitude—with data on single-thickness glass on one side of the sheet and double on the other.

In addition to the various types of window glass, similar tables cover glass block, walls, roofs, ceilings, floors, partitions, people, appliances, and ventilation air. Also included are appendix tables on such items as simplified air volume calculations, heat removal, building materials lag, and shade factors.

Russell L. Brown, Arkla manager of heating and air conditioning products, noted that there are no multiplications or multiple tables to be consulted in order to derive the summer cooling factor.

He also pointed out that the Comfort Guide, in making possible an infinite selection of apparatus dewpoints by means of curves, permits determination of air volume for any application.

In addition, separator tabs are provided with the manual sheets for easy insertion into a looseleaf binder. Complete instructions on use of the manual are included. Arkla used the latest ASHRAE Guide and other up-to-date sources in compiling its Comfort Guide, it was pointed out.

The accompanying pad of Arkla heating and cooling load estimation forms allows two load calculations per sheet, facilitating the figuring of multiple-zone jobs. Instructions on use of the forms are on the inside front cover. The reinforced covers make the pads usable at the job site, and the estimating forms lend well to copy reproduction, Brown said.

The Arkla psychrometric chart is of a standard type and usable for a wide range of calculations, with 25 charts to the pad.

Brown said the Comfort Guide can now be ordered direct from Arkla. Prices are as follows: The Arkla Comfort Guide manual, $2 each; the load estimator pad, 50 cents each; and the psychrometric chart, 25 cents each. Address all orders to: Arkla Air Conditioning Corp., 812 Main St., Little Rock, Ark.

PLAN ACROSS-THE-BOARD — You make your picks from a *complete* line of air conditioning and heating equipment motors—*blower* types . . . *inside-out* design . . . *hermetics* . . . *integrals* in a wide range of hp plus an exceptional range of modifications.

POWER WITH A PEDIGREE — The right combination of features are bred into each A. O. Smith motor type to deliver top performance for its application. Check the paddock below for individual blood lines.

And for the best tips in motors, send for our Tipp City Form. It contains track records on A. O. Smith's complete stable of fractional and integral hp favorites. Or get in touch with your nearby A. O. Smith motor man.

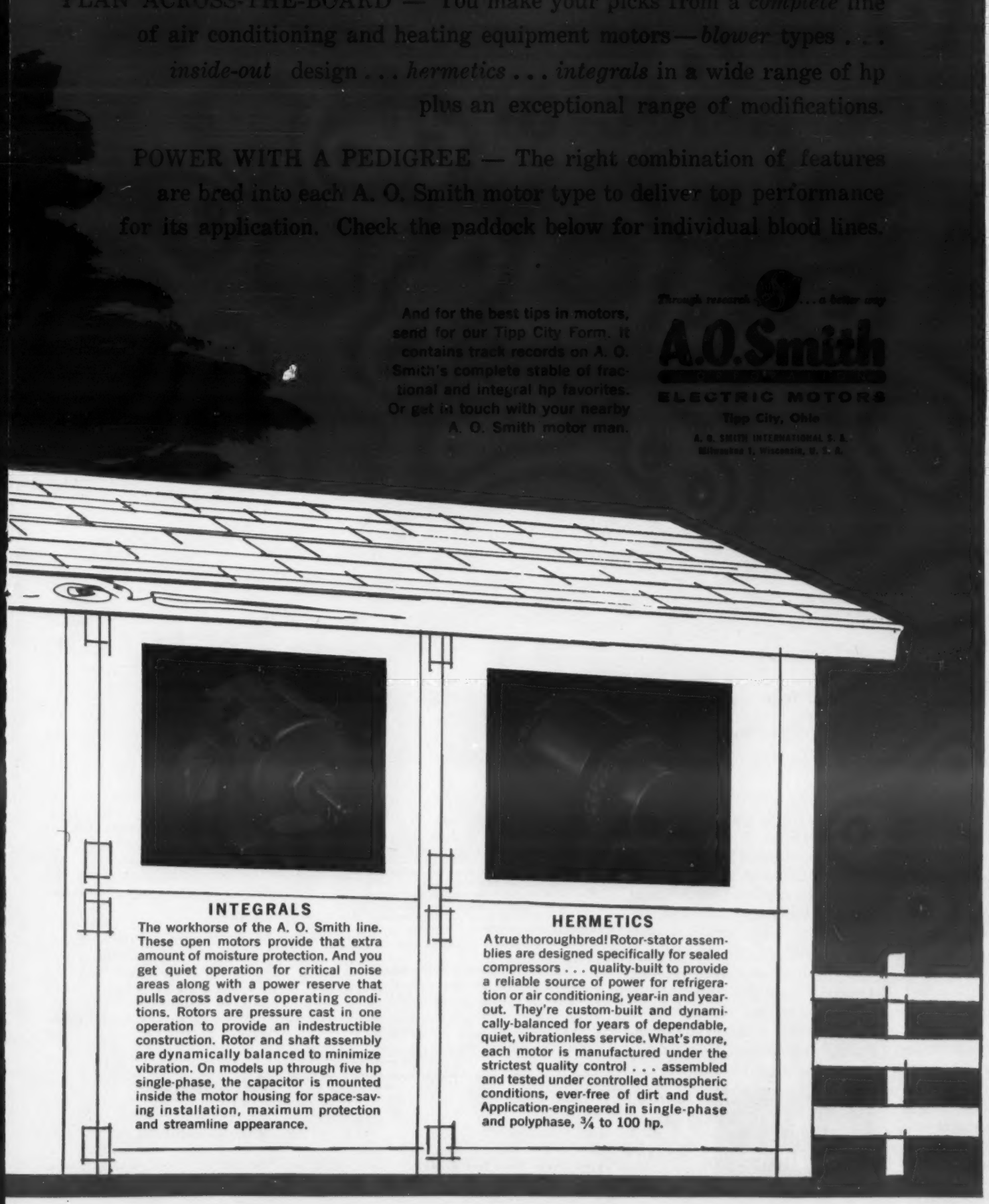
Through research . . . a better way

A.O.Smith

ELECTRIC MOTORS

Tipp City, Ohio

A. O. SMITH INTERNATIONAL S. A. Milwaukee 1, Wisconsin, U. S. A.



INTEGRALS

The workhorse of the A. O. Smith line. These open motors provide that extra amount of moisture protection. And you get quiet operation for critical noise areas along with a power reserve that pulls across adverse operating conditions. Rotors are pressure cast in one operation to provide an indestructible construction. Rotor and shaft assembly are dynamically balanced to minimize vibration. On models up through five hp single-phase, the capacitor is mounted inside the motor housing for space-saving installation, maximum protection and streamline appearance.

HERMETICS

A true thoroughbred! Rotor-stator assemblies are designed specifically for sealed compressors . . . quality-built to provide a reliable source of power for refrigeration or air conditioning, year-in and year-out. They're custom-built and dynamically-balanced for years of dependable, quiet, vibrationless service. What's more, each motor is manufactured under the strictest quality control . . . assembled and tested under controlled atmospheric conditions, ever-free of dirt and dust. Application-engineered in single-phase and polyphase, ¾ to 100 hp.

Union Carbide Names C. Wayne Covington

NEW YORK CITY—Appointment of C. Wayne Covington as manager of sales for "Ulok" transporation filters was announced by Union Carbide Development Co., division of Union Carbide Corp.

Prior to joining Union Carbide, Covington was sales engineer for U. S. Railway Equipment. He was also associated with Pullman Co. for 30 years.

Connor Appoints R. E. Lindsey Co.

DANBURY, Conn. — Connor Engineering Corp. has announced the appointment of the R. E. Lindsey Co., Jackson, Miss., as exclusive representative in Mississippi for the distribution and service of "Kno-Draft" adjustable air diffusers, high velocity valve attenuators, and "Dorex" air recovery and air purification equipment.

Consulting Engineers Council--

(Continued from Page 5, Col. 5)

of consulting engineers would be impractical. Therefore, consulting engineers should be commissioned to do the maximum amount of engineering work for the Federal, state, and municipal levels of government consistent with the most economical cost.

"Most government programs create work above and beyond what should be considered a normal work load. On that account, it would be eminently proper to assign the overflow work to engineers in private practice who comprise a substantial reservoir from which competent consulting engineers can be selected."

One highlight of the meeting was the presentation of the awards in the "Engineers' Technical and Product Literature Competition" sponsored jointly by the CEC and the Producers' Council. Purpose of this project is to recognize the outstanding literature currently available to the consulting engineer, and to encourage manufacturers to produce literature directed primarily to the consultant.

In the Class Two competition, literature offering technical information relating to products of a single manufacturer, the exceptional merit award was won by Ramet Fastening System, Olin Mathieson Chemical Corp.; the certificate of merit went to Lennox Industries, Inc. for the Lennox Engineering Handbook; and honorable mention was won by General Electric Co. for its Electrical Equipment Specifications Manuals.

Speaking at the Awards Luncheon, John E. Haines, commercial vice president of Minneapolis-Honeywell Regulator Co., pointed out that "present day buildings are no longer protective shells, but more of an enclosure to house facilities designed to create the best possible indoor environment. The mechanical part of construction contracts in many modern buildings are running 40 to 60% of the total cost."

New officers of the CEC are president, Harold King, Sherman Oaks, Calif.; vice president, Cedric Acheson, Syracuse, N. Y. (a past president of the Central New York Chapter of ASHRAE); second vice president, Sanford K. Fosholt, Muscatine, Ia.; secretary, George J. Toman, Mandan, N. D.; treasurer, George W. Poulsen, Jr., Salt Lake City.

Next semiannual meeting of the group will be held Nov. 2-4 in Miami Beach, and annual meeting May 3-5, 1962, in New Orleans.

Bid Registry--

(Continued from Page 1, Col. 3)

approximately $800,000.

Cooperating in the plan were the Joint Construction Industry Committee of the Detroit chapter of the American Institute of Architects, and the Builders and Traders Exchange of Detroit, this last-named embracing most of the contractors and subcontractors in the Detroit area.

Avowed purpose of the plan, as Harley, Ellington, Cowin & Stirton, Inc. officials saw it, was to insure that there would be no "bid shopping" among general contractors seeking the award on the University of Detroit building, the practice whereby a general contractor plays one subcontract bidder against others to achieve a low bid.

"Our principal aim was to insure our getting the best possible job," said an official of the architect-engineer firm. "When a subcontractor gets into a bid-shopping proposition he often will attempt to cut corners, and this results in a sub-standard job.

"There were some who worried that a bid registry plan would tend to inflate the contract price," said the official, "but we felt that the contractors would have to come in with a fair price, and yet one that would give everyone concerned a fair profit. And that's the kind of bids we got."

In the Detroit bid-registry plan, subcontractors were required to make two copies of their bids. One copy was deposited with the general contractors who were bidding on the job, and one was deposited with the Bid Registry, whose activities were supervised by a representative of Harley, Ellington, and by representatives of the Builders and Traders Exchange.

Subcontractors were not required to submit the same quotations to each general contractor, nor to submit a quotation to all of the generals who were bidding. A deadline was set for submission of bids by the subcontractors and strictly adhered to (a bid that was less than 5 minutes late was actually refused).

What Generals Must Do

Twenty-four hours after the subcontract bid deadline, general contractors were required to submit their bids. The generals were not obliged to list only the low bids, but it was required of them that they make their tentative subcontract awards only to firms listed in their original proposals.

The general contractors were also required to submit sworn certification that bids received from tentative subcontractors were the prices and terms on which the subcontracts could be awarded.

In checking upon the bids, the bid registry officials will check only those subcontract bids on which awards were made. All others will be returned to bidders unopened. This will eliminate any "snooping" into the prices offered by the various subcontractors.

For the University of Detroit project, 12 general contractors offered proposals and some 100 subcontractors representing 17 trades submitted bids. The mechanical part of the contract will probably amount to nearly $150,000, it is believed.

Was the 24-hour period from the time subcontractor bids were received until the general contractors were required to submit their bids considered too short a time by the latter group?

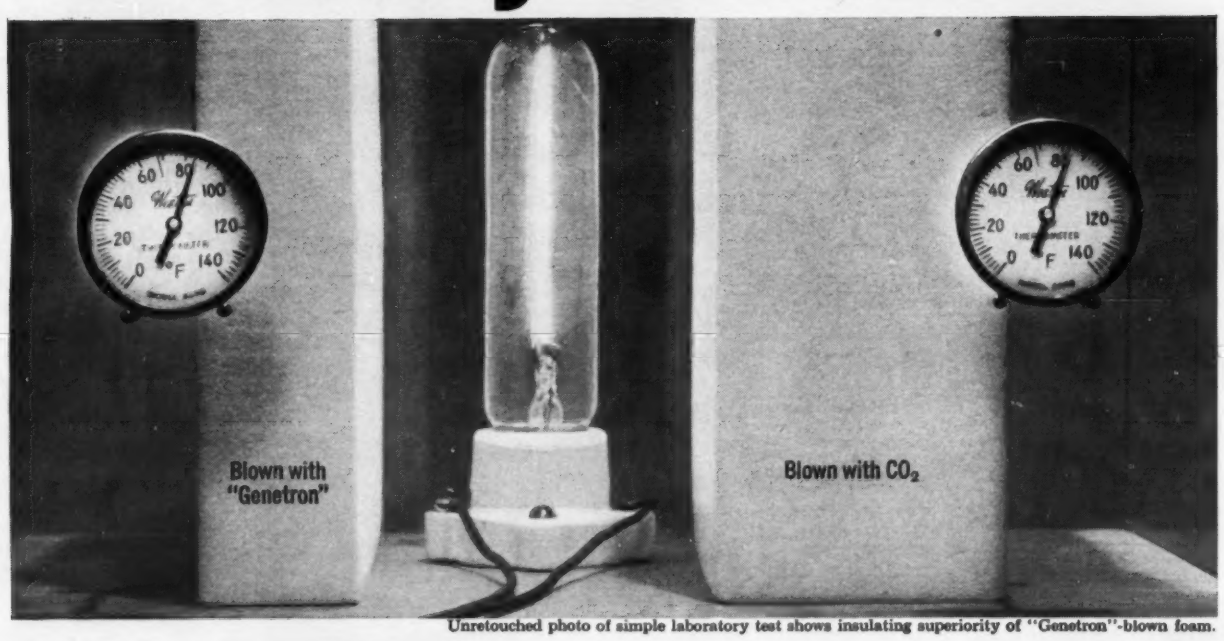
"Not at all," said the Harley, Ellington representative. "In fact, most of them said it was much more desirable than the usual procedure whereby they may be juggling bids by subcontractors up to a half hour before putting together their final bid."

Airtemp--

(Continued from Page 1, Col. 3)

in the corporation. For the past year he has been president of the Amplex Div., which is also part of the corporation's Special Products Group.

Half the "k"-factor of ordinary urethane!



Unretouched photo of simple laboratory test shows insulating superiority of "Genetron"-blown foam.

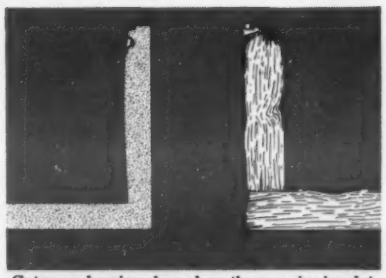
Insulation of genetron®-blown foam is up to twice as effective as carbon dioxide-blown foam... more than 2 times as effective as glass wool batting.

Now there's a new and better way to make urethane foams for thinner wall insulation . . . with "Genetron" blowing agents. "Genetron"-blown foams offer far superior insulating performance—as much as 2 times the insulating value of CO_2-blown foam and 2½ times that of glass wool batting. With "Genetron"-blown urethane, storage capacity of refrigerators and freezers can be increased on the order of 20% without increasing outside dimensions.

"Genetron"-blown foams offer many important working advantages, too. They rise at lower temperatures, permitting larger forms to be prepared. They are easier to control, because "Genetron" does not react chemically with other constituents. They cure rapidly, even at room temperature. They are safer... release less of the toxic vapors and no flammable vapors.

In addition, when foamed in place, "Genetron"-blown urethanes provide all the structural advantages of ordinary urethanes . . . stronger construction . . . better support for deep cavity liners.

For further information write for General Chemical's comprehensive technical bulletins, "Genetron Blowing Agents for Rigid Urethane Foam," and "Determining Genetron Content of Rigid Urethane Foam."



Cutaway drawing shows how the superior insulating properties of foamed-in-place "Genetron"-blown urethane foams save space in refrigerators, freezer boxes and other applications. Storage capacity can be increased on the order of 20% without increasing outside dimensions.

Other major components of the urethane foam system are also produced by Allied Chemical. These components are: Nacconate® diisocyanates by National Aniline Division; polyester resins by Plastics and Coal Chemicals Division.

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

NEW

FROM

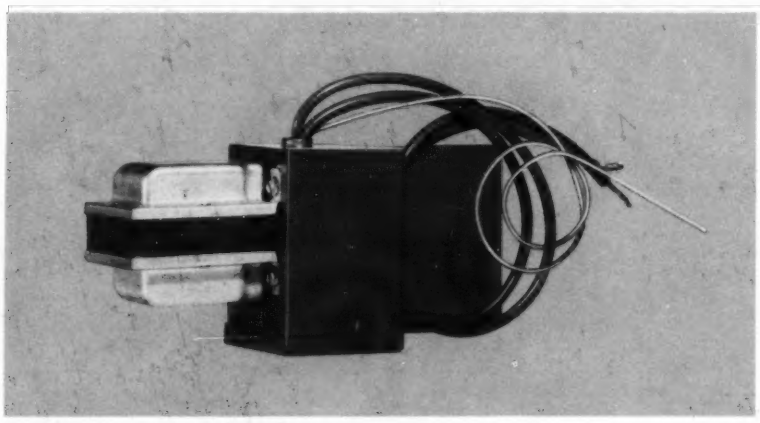
bryant

NOW! QUIET NIGHTTIME AIR CONDITIONING WITH BRYANT'S EXCLUSIVE NEW WEATHERPROBE

Never before have you had so great a selling feature for so few dollars. Weatherprobe is *immediately available* on all models of the popular 562 unit. Costs less than an expansion valve. Call your Bryant Distributor or Factory Branch today.

WEATHERPROBE

THE INDUSTRY'S NEWEST HOTTEST SELLING FEATURE



WHAT IT IS...HOW IT WORKS. Bryant's Weatherprobe is an amazingly simple selective motor speed regulator. It takes advantage of the fact that at temperatures under 90°, a Bryant air cooled unit will deliver full rated capacity with much less air flowing across the condensing coils. Under 90°, Weatherprobe automatically slows the condenser fan speed to a remarkably low noise level. When temperatures go above 90°, Weatherprobe automatically shifts the fan speed into maximum capacity operation and the unit continues to operate at full ARI capacity. Simple, isn't it? Selling is simpler too, with Bryant.

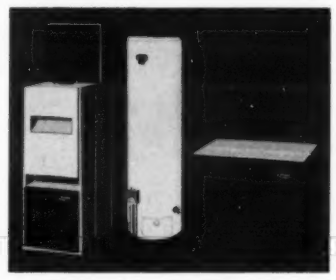
UNIT LOCATION PROBLEM SOLVED. Where houses are close together or space is restricted, Weatherprobe's "extra quiet" operation will make the sale a lot easier to close.

IN ADDITION—you can make up some sixty different combinations of Bryant condensers and coils to meet almost any conceivable need. 2 to 7½-ton units.

SOLID LOCAL SUPPORT in layout, sizing and supervision of jobs by factory trained air conditioning experts is available through your local Bryant Distributor or Factory Branch.

NEW IDEA

TO HELP YOU MAKE 3 SALES INSTEAD OF 1



BRYANT HOME COMFORT CORE

On both remodeling and new house work, suggest a complete Bryant Home Comfort Core – furnace, air conditioner and water heater. Dealers tell us it's a lot easier to get *extra* business than they thought. For builders Bryant has a down-to-earth Merchandising Program *to help them sell homes faster.* Your Bryant Distributor or Factory Branch has all the facts and will help you. Call them.

12 REASONS WHY DEALERS LIKE

BRYANT

1. Most complete line. 2. Exclusive selling features. 3. Fast delivery. 4. Most flexible financing and credit aid. 5. On-the-spot counsel. 6. Sales and technical training. 7. Business management guidance. 8. Local ad campaigns. 9. Sound sales policies. 10. National reputation. 11. Gas air conditioning. 12. Bryant's financial strength.

Join up with

bryant

the company on the move!

BRYANT MANUFACTURING COMPANY
Indianapolis 7, Indiana

Weather Tower Gets 'Outside Heating'

MUELLER CLIMATROL electric furnace mounted under Weather Observation Tower at Forbes Air Force Base. Lack of space and possible interference with instruments were cited as reasons for the exterior mounting.

TOPEKA, Kan. — The new Weather Observation Tower of the Forbes Air Force Base here is climate conditioned with a Mueller Climatrol electric furnace.

Due to a lack of space inside of the structure, the furnace was installed outside and under the building (note photo).

Electric heating was chosen because emission of flue gases would have had an unfavorable effect on the delicate weather instruments located on the roof of the tower, according to Mueller Climatrol.

"Outdoor" installation was also necessary because a motor driven unit would have also caused effects on the delicate weather instruments, it was pointed out. Since the electric furnace is able to provide fresh outside air, humidity levels can also be controlled, and humidity control is important for instrument reliability.

Summer cooling is planned for installation this year. Since the electric furnace has a built-in provision for cooling, air conditioning will be easily added and with a minimum of expense, it was stated.

The installation was made by the McElroy Refrigeration & Heating Co., Topeka.

Community Hospital In Syracuse To Be Fully Conditioned

SYRACUSE, N. Y.—The new Community hospital to be completed here in 1962 will be the first fully air conditioned medical center in central New York, and the first anywhere to use the new Carrier "Bypass Weathermaster" room terminal unit, according to Carrier Air Conditioning Co.

Patient rooms for the 300-bed, five-story hospital will be served by 237 of these induction units with built-in controls that reduce installation costs, it was pointed out.

Interior zones will be served by low pressure and dual duct systems. Two absorption refrigeration machines, a cooling tower, and central air handling apparatus will be located in a penthouse built on one-story-high stilts to permit the addition of another floor if future expansion is desired.

The consulting engineer is Robson & Woese, Inc., and the mechanical contractor is Kenneth A. Taylor, Inc., both of Syracuse. The hospital was designed by the firms of Eggers & Higgins, New York City and King & King, Syracuse.

15 Buildings with 4,500 Doors and 18,000 Windows Spread Over 85 Acres Posed Problem In Cooling 1,000-Bed Hospital

PALO ALTO, Calif.—How do you air condition a project with 4,500 doors and 18,000 windows? Well, it's no breeze.

It was done on the lower eastern slope of the Santa Cruze Mountains near San Francisco. The real estate: the $20 million, 1,000-bed Veterans Administration hospital at Palo Alto.

Fifteen buildings spread over 85 acres were equipped with air conditioning for the comfort of patients in the general medical, surgical, and neuropsychiatric branches.

To service the complex, Recold Corp. of Los Angeles, one of the chief suppliers of equipment, provided water coils, steam coils, separate air conditioning units, and evaporative condenser. The result was a built up system, operating out of a central chill and steam plant.

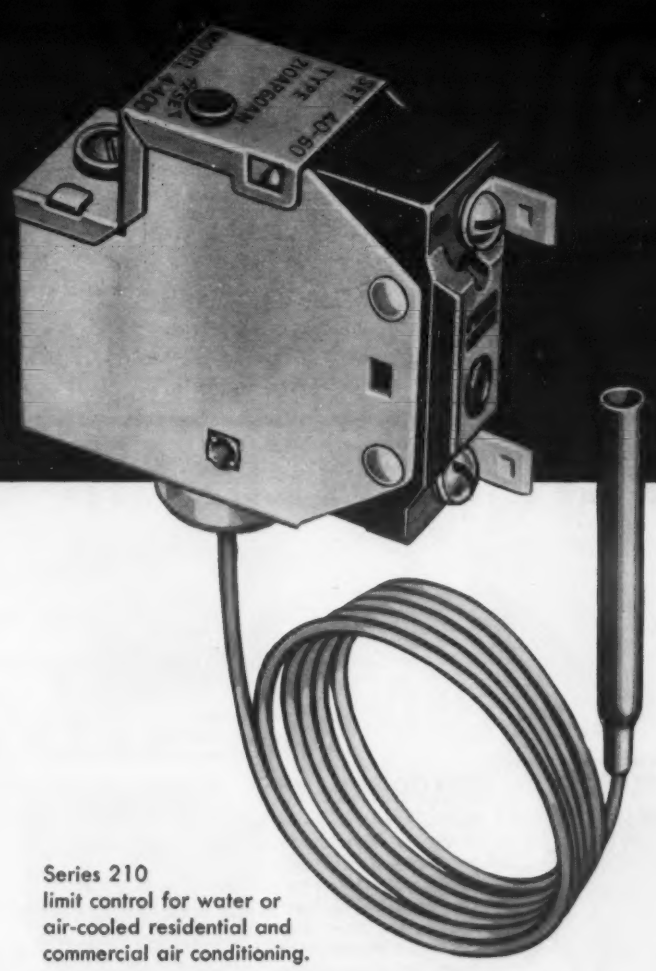
"Plans for various laboratories at the hospital indicate it will become one of the major centers in the national research program," Recold reported. Controlled humidity and uniform air conditions throughout the facility, therefore, were of the utmost importance.

"The equipment monitors and does its own kind of doctoring of air and environment for heart, metabolism, biochemical, microbiological and skin research, and surgery.

NOW!
NO MORE
WAITING

Servicemen... here's the best news ever!

your wholesaler has limit controls for replacement on all packaged air conditioning



Series 210
limit control for water or air-cooled residential and commercial air conditioning.

Penn universal replacements help you give immediate service

Now . . . Penn's Series 210 limit control, widely-used by manufacturers of packaged residential and commercial air conditioning, *is available for field replacement.* And, with its adjustable pressure range, it will fit the specifications of any air conditioner manufacturer.

No more waiting . . . no more disgruntled customers . . . simply go to your wholesaler and get immediately the correct replacement for the high or low limit control. Your wholesaler has a handy Penn cross-reference chart which makes proper selection fast and easy.

Remember, to give your customers prompt service . . . go to your wholesaler and ask for the Penn Series 210 limit control.

PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N.Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

NEMA Room Air Conditioner Section Announces Plans To Promote Benefits of Certification

BOCA RATON, Fla.—The section's certification program for room air conditioners was discussed at the second annual meeting here of the Consumer Products Div., National Electrical Manufacturers Association, by Paul Augenstein, chairman of the Certification Committee, Room Air Conditioner Section.

Augenstein reported that the program will aim at educating consumers to purchase NEMA-certified units as their assurance of getting the Btu cooling capacity stated on the label.

Utilities, Associations Supporting NEMA Drive

In reviewing appliance promotion activities, the division reported that more individual utilities as well as national associations such as Edison Electric Institute and the National Rural Electric Cooperative Association, and regional groups such as the American Electric Power System, were coordinating appliance and Medallion Home programs with NEMA themes and promotional aids.

The 1961 NEMA promotions cover room air conditioners, refrigerator-freezers, and the Medallion Home, among others. Each section produced a promotion kit containing display, direct mail, and newspaper editorial material built around the current NEMA theme for that appliance.

Room Air Conditioner theme: "Weather Control at Your Fingertips." The package includes: a three-color display streamer; two folders for direct mail and give-aways; an ads-and-ideas folder, newspaper stories and pictures.

One of the folders is designed to spur pre-summer sales and use of room air conditioners. It reads: "Don't wait till it hits 90°."

Mort Farr, board chairman of the National Appliance & Radio-TV Dealers Association and president of Mort Farr, Inc., Upper Darby, Pa., told the association it is "becoming more and more apparent the only way to sell profitably in the 1960's is to sell creatively." He asked for "non-conformity of new ideas."

For merchandising leadership, Farr said, dealers must look to the superior resources of equipment manufacturers and utilities. He praised NEMA's program of providing promotional materials for utility use.

The electric dishwasher and the room air conditioner are "new frontiers" for organized promotion and imaginative selling, the NARDA leader said. Another new frontier would be a more orderly system of distribution, he added.

Asking for "morality in the marketplace," Farr said there is a place for the dealer who "gives service and adds value by home demonstrations and buyer instruction, and skillful installation."

Commerce Dept. Official Sees Businessmen Reappraising Practices

More than 60 NEMA executives in attendance heard guest speaker Hickman Price, Jr., Assistant Secretary of Commerce, commend the association for its aim to further not only the objectives of manufacturers but the interests of the public as well.

Commenting on a current investigation of advertising and promotional allowances at the retail level, Price said: "We believe that businessmen everywhere . . . are reappraising their practices, making sure they are lined up with both legal and ethical concepts. We have noted that the National Electrical Manufacturers Association is giving attention to the problem."

The Consumer Products Div. re-elected chairman Homer L. Travis, and named Jack Sparks vice chairman at its second annual meeting here.

Travis is vice president, sales, with Kelvinator. Sparks holds the corresponding post with RCA Whirlpool.

Among sections of the division electing officers were:

Room Air Conditioner Section —chairman (re-elected), L. M. Larkin, general manager, Air Conditioning Div., Whirlpool; vice chairman, C. J. Zeller, product manager, air conditioning, Philco.

Household Refrigerator and Freezer Section — chairman, Walter A. Wendler, vice president in charge of sales, Amana; vice chairman, W. D. Krauter, product manager, appliance division, Admiral.

Panels, Mounting Frame To Be Included with Carrier Portable Model

SYRACUSE, N. Y.—Carrier Air Conditioning Co. will offer adjustable wing panels and mounting frame free of charge with its latest model portable room air conditioner.

"The mounting frame, which fastens to the air conditioner, holds vinyl panels that extend to fit windows from 28 to 40 in. wide," it was pointed out. "The sliding wings lock and give a weathertight fit."

Beginning about May 15, Carrier will supply the accessories for each portable (model 51AE-46-115) in distributor and dealer stocks. Future factory shipments will include the panels and frame.

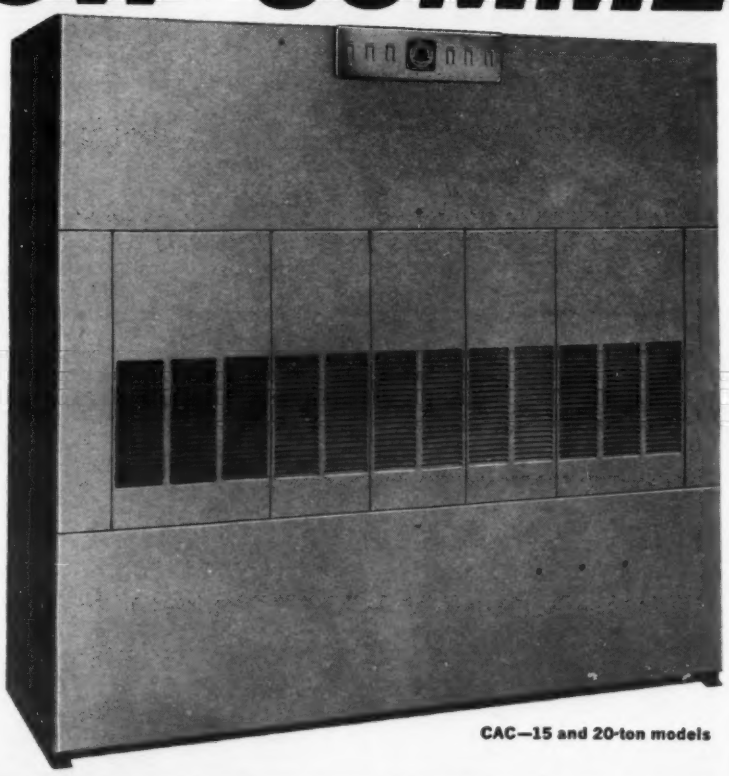
NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Room Units Sought By Hong Kong Firm

WASHINGTON, D. C.—Worldwide Sales Corp., importing distributor and manufacturers' agent, Wellington House, 3A Wyndham St., Hong Kong, B.C.C., is interested in ordering appreciable quantities of room air conditioners and refrigerators, according to the Business & Defense Services Administration, U. S. Dept. of Commerce.

Specifications were given as follows: air conditioners—½-2½ hp, refrigerators—7 to 11 ft, both 50 cycles of 220 voltage.

NOW-COMMERCIAL



CAC—15 and 20-ton models

NEW!

CAC Units (Water or Air Cooled)—These units are designed for use in restaurants, supermarkets, offices, factories, churches, larger homes, etc. They are available in both packaged and split-system types. The cabinets of the units are compact (see size table, right) and the units are easy to install. They are available in 3*, 5, 7½, 10, 15 and 20-ton cooling capacities. The 3, 5 and 7½-ton units are equipped with a single compressor, the 10-ton units with a single compressor or double compressors, and the 15 and 20-ton units each have two compressors. Optional plenums are available that have four-way adjustable grills. All

SPLIT SYSTEM AIR CONDITIONER

RC-B
Horizontal with Universal Blower
22,000 to 82,000 BTUH

RC-H
Horizontal
21,600 to 56,000 BTUH

CONDENSING UNIT

AC-B
2, 3, 4, 5 & 7-ton cooling capacity

RC-V
Vertical
22,000 to 55,000 BTUH

EVAPORATORS

The RC-B evaporator, with its universal blower, can be mounted with its own ductwork or used where a furnace has insufficient blower capacity. The three other "add-on" evaporators shown here offer complete versatility of installation to a dealer.

RC-C
Counterflow
21,000 to 46,000 BTUH

THE COMPLETE LINE IS

Power Shortage—

Philippine Firm Seeks Absorption Equipment

International (Service)
Enterprises
P.O. Box 3070
Manila, Philippines

Editor:

For your information, we are an American company, licensed and doing business here in the Philippines.

There is a great lack of electric power in all the provinces and towns, with the exception of principal cities like Manila, Cebu, Iloilo, Dagupan, Legaspi, etc. Most of the cities or barrios, as they are locally called, have electricity available only from about 6 p.m. until midnight. Small barrios and rural areas have no electricity unless someone in the neighborhood owns a small electric generating plant.

During the last two years, the Filipino people have learned the convenience and need for refrigeration. However, very few have the convenience, with the exception of some who own an imported Servel of Electrolox refrigerator. Those imported refrigerators are very expensive because of import duties, government taxes, etc.

For some time, we have been considering very seriously the possibility of manufacturing in the Philippines absorption type household refrigerators, beverage coolers and refrigerated meat and vegetable display cases (chill temperature only). We have been following very closely all the articles of absorption refrigeration published in your NEWS, particularly the items in your Sept. 12, 1960 issue, page 36, "Absorption Refrigeration and Air Conditioning Discussion of Basic Differences in Systems."

We would like, at this time to make contacts with manufacturers of absorption type (kerosene fuel operated) refrigeration equipment whom or who will be interested to work with us on a joint venture, licensing or royalty basis, to produce and manufacture absorption refrigeration equipment of the types mentioned, in the Philippines.

We note that there is a very large and lasting potential market for this equipment. The possibility of electric power being available throughout the Philippines is very remote and will take many years.

We are also interested, at this time, to contact manufacturers of larger absorption equipment which could be used by rural ice making and cold storage plants, etc. This equipment should use diesel oil as fuel. Further, this equipment would be imported as already manufactured equipment.

Our third interest, at this time, is absorption air conditioning units for the better rural homes and business establishments. The fuel for these units could be kerosene or diesel fuel. These homes have their own generating plants for supplying electricity for blowers, fans, controls, etc. The electric systems are usually not large enough to carry the additional loads for other types of refrigeration.

Our second and third requests are secondary at this time. Our main concern at the moment is to manufacture absorption systems as outlined.

For a long time our company has been contemplating establishing in the Philippines a parts supply house for the refrigeration industry. During the past years the availability of air conditioning and refrigeration equipment, particularly the replacement and spare parts have been sorely lacking.

We would be interested in corresponding with companies which are not now represented in the Philippines that would be interested in setting up representation or a distributorship for maintenance equipment, tools, controls, testing equipment, etc.

The field is open for just about all kinds of supplies. Import restrictions, the availability of U.S. dollars, and high import and custom duties have been the reasons in the past for this type of equipment not being imported.

Complete Decontrol Seen by End of 1961

The Philippine government has recently started decontrol. Business circles are contemplating complete decontrol by the end of 1961. We would entertain offers from interested companies as follows:

1. Set us up as a supply house on a joint-venture basis.
2. Entertain local manufacturing and assembly, joint-venture or royalty.
3. Straight manufacturers' exclusive representative.
4. Other practical suggested working proposals will also be entertained.

Most of the first line companies, Carrier, Westinghouse, General Electric, Frigidaire, etc., are now represented in the Philippines. We are interested in supplying contractors, srvice shops, Philippine government entities, etc., with the various items needed in the overhauling, installation, maintenance, and service fields.

Trend Is to Air-Cooled Units

The recent trend in the Philippines is from water to air-cooled condensing. We would be interested in corresponding and working with companies manufacturing and specializing in air-cooled condensing systems.

The major component parts of this system could be imported, disassembled (knock down) for re-assembly here. Other larger and bulky parts such as coils, etc., could be manufactured locally from imported materials. This operation could be also worked out as a joint venture or royalty project.

We have been in business here in the Philippines for the past five years and sincerely believe that now is the time for USA companies to establish themselves here.

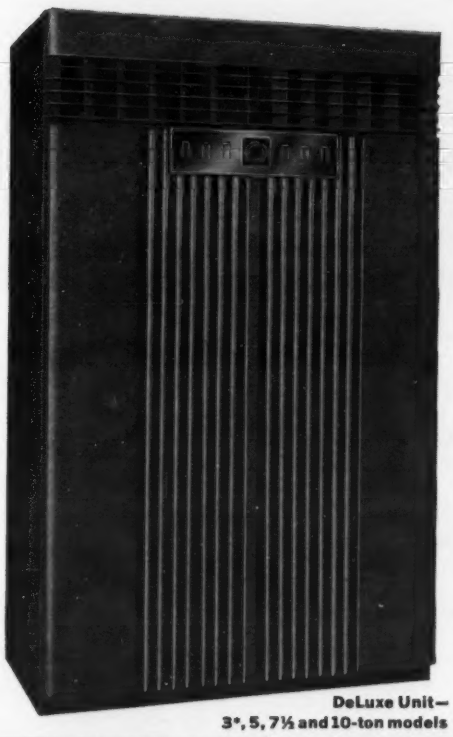
Competition is very keen from Japan, West Germany, and other European countries. There is now a very decided desire by Philippine people to buy USA made products.

We also think, however, that once other countries products are introduced and found to be satisfactory the chances for American products to enter and carry the field at a later time will be difficult.

JAY C. CLICK,
President & General Manager

OR RESIDENTIAL-

NEW!



air-cooled models can be used on low ambient applications. The economy version of the 3, 5, 7½ and 10-ton units costs the dealer approximately 5% less, so he's ready to meet competition where price is the deciding factor. The mechanism is the same as the de luxe model, but the unit has a simpler grill.

*Available only in water-cooled type.

	3	5	7½	10	15	20
H	85¾	85¾	87¾	83¾	80	80
W	42	42	50	66	84	108
D	24	24	30	30	31¼	31¼

DeLuxe Unit—
3*, 5, 7½ and 10-ton models

EconomyUnit—
3*, 5, 7½ and 10-ton models

AC-BR
Outside Unit
3 & 5-ton

RC-BR
Inside Unit
with Universal Blower

SPLIT SYSTEM

HEAT PUMPS

PACKAGED UNIT
ACPR 2, 3, 4 & 5-ton

SELF-CONTAINED PACKAGED UNIT

The ACP is a complete, self-contained air conditioner with high-capacity blower. It is designed for installation in attic, breezeway, utility room, basement, crawl space, through-the-wall or outdoors. 2, 3, 4 and 5-ton cooling capacity.

ACP

Get the data sheets and price lists on these units today—your American-Standard Air Conditioning Division Distributor has them. This distributor is a specialist—selected because of his experience, dependability and outstanding service facilities. He always maintains an adequate inventory of products for your needs, and he will deliver promptly. Call him today.

American-Standard and Standard® are trademarks of American Radiator & Standard Sanitary Corporation

AMERICAN-Standard
AIR CONDITIONING DIVISION

AMERICAN-STANDARD!

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1)

the Maine and his father remembered the Alamo.

Remember too, the classroom where you first heard slogans of the American Revolution:

Patrick Henry's "Give me liverty or give me death" and an equally famous remark, usually attributed to James Otis, "Taxation without representation is tyranny."

What Otis *really* said was much more prosaic: "No parts of his majesty's dominions can be taxed without their consent."

Go for Broke

"Banzai!" . . . the ancient Japanese war cry, literally means "ten thousand years." An heroic U. S. Army division of Japanese-Americans coined a new battle slogan in World War II: "Go for broke!"

That phrase was so applicable to so many peacetime situations that it became part of our language.

Also colorful have been the battle cries brainstormed by Madison Avenue men.

"Children cry for it" was the implausible but memorable boast of one maker of a castor oil product.

"Eventually—why not now?" became a classic catchphrase even among those who didn't remember that Gold Medal flour had asked the question.

And who can forget the "tattle-tale gray" banished by Fels-Naptha . . . the "five o'clock shadow" removed by Gem blades . . . Woodbury's "skin you love to touch"—and the less caressable miss, immortalized by a Listerine ad, whom even her best friends wouldn't tell?

Though many think that constant repetition and a catchy promise, untrammeled by fact, are the main requisites for a successful advertising slogan, corporations usually do back up the truth of their slogan claims.

Even more interesting are the battle cries of the political arena.

"Keep Cool with Coolidge" . . . "Tippecanoe and Tyler too" (which meant only that Benjamin Harrison, hero of the battle of Tippecanoe, was running with John Tyler on the Whig ticket in 1840) . . . "turn the rascals out"—urged, unsuccessfully, by Horace ("Go West, young man") Greeley in 1872.

"A full dinner pail" promised Republican William McKinley in his victorious presidential campaign of 1896.

Reluctant to give up a good thing, he pledged "four more years of the full dinner pail" in 1900—and won again.

The Republicans achieved less happy results with their 1928 slogan of "a chicken in every pot, a car in every garage."

Bitterly regarding this as an unfulfilled promise made by President Hoover—though he hadn't coined the phrase—the depression-battered voters responded in 1932 to another famous campaign slogan—"A New Deal."

"You never had it so good!" was the 1952 Democratic reply to the Republican "time for a change." (Abraham Lincoln, campaigning for re-election in 1864, put it more pithily: "Don't swap horses in midstream")

The "I Like Ike" slogan of 1952 recalls the 1868 Republican chant for Grant: "Match him."

For our money, the most wistfully appealing campaign slogan of all time was one used by U. S. Grant's forgotten Democratic opponent, Horatio Seymour: "Reduce taxation before taxation reduces us."

Unlike the slogan, traditionally used to excite and persuade, a motto simply announces a characteristic or belief with which the owner wants to be identified. (The first slogans were yells, but the quieter motto derives from a Latin word meaning "mutter" or "grunt.")

Most people think that the national motto of the United States is "E pluribus unum."

Wrong: in 1956, Congress made "In God We Trust" the official American motto, after the House judiciary committee had called for a national motto "in plain, popularly accepted English."

(Actually, almost half of our states and even more of our colleges have adopted Latin, Greek, or other foreign language mottoes.)

Which all goes to show that very little else is predictable in the fascinating flux of slogans and mottoes.

"Come one, come all."

Out of Our Mailbag

E. I. du Pont de Nemours & Co.
Wilmington, Dela.

Editor:

Under a "How Literal Can You Get, department?" you may be interested in printing the following abstract from the Philadelphia "yellow pages" phone directory under "Grilles and Registers":

General Register Corp.
Harrington & King Grilles
Harry's Grille, 8 S. 4th Street
Hendrick Perforated Metal Grilles

W. G. YEDLIN

Stories of the Week

Millionaire's wife came to the hospital where her husband had been carted.

"Doctor, is there any hope?" she begged.

"Er, what are you hoping for?"

"It takes you only two seconds to pull a tooth," complained a patient. "Yet you charge me $10. That's a high price for your time."

"As you wish," cheerfulled the dentist. "I can pull it out slow-w-l-ly, if that's your desire."

There are two kinds of conventioneers.

One brings home a gift to his wife.

The other behaves himself.

Philosophy of the Week

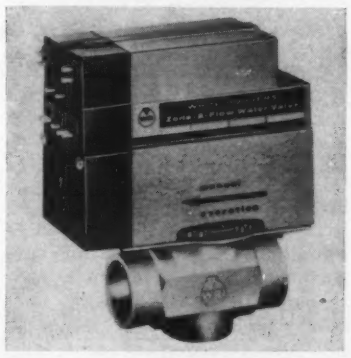
When you reread a classic you do not see more in the book than you did before; you see more in *you* than there was before."—CLIFTON FADIMAN.

The man who will not start with humility will quite probably end with humiliation. — C. F. BANNING.

You may have noticed that the less I know about a subject the more confidence I have, and the more new light I throw on it.—MARK TWAIN.

H & H puts the "pro"
Better Brass and Copper Products Since 1930
Like anything else worth doing, *prototype* work, too, is worth doing well. And for a truly *professional* job, there is no better source for prototypes made of tubing, than H & H. Over 30 years of experience meeting the highest standards of precision in *all* phases of tube fabrication has made the name H & H synonymous with prompt, dependable service. So the next time, why guess? Remember, H & H puts the "pro" in prototypes.
H•H TUBE AND MANUFACTURING CO.
271 North Forman Avenue, Detroit 17, Michigan • Offices from Coast to Coast
SEAMLESS
LOCKSEAM
COIL STRIP
STRAIGHT AND COILED TUBE
TUBULAR PARTS
prototype
PLANNED FOR PRECISION

White-Rodgers Automatic Valves Provide Hydronic Heating, Cooling Zone Control



ST. LOUIS—A newly-designed series of zone valves has been announced by White-Rodgers Co.

The St. Louis automatic controls maker said these "very high powered, ruggedly constructed" valves provide "extremely dependable" zoning control for modern hydronic heating and heating-cooling systems.

Two new valve styles are offered: the " 'Zone-A-Flow' Straight-Thru" type, for multiple-pipe systems; and the " 'Zone-A-Loop' Diverting type," for single-pipe installations. The average weight of these compact valves is slightly over 4 lbs, it was noted.

The valve is operated by a specially-designed shaded-pole motor.

"Working through the greatly improved gear train and valve stem, this high-torque motor provides dependably positive opening and closing power," the company stated. "The gear train is made of du Pont 'Delrin,' a super-tough material that permits these gears to stand up under extreme friction, impact, and fatigue while running quietly.

Sound Dampening

"In addition, the motor and gear train are completely immersed in sound dampening, life-of-the-unit lubricating fluid and sealed in a sturdy metal case.

"This unique construction, combined with the valve's slow opening and closing, very markedly reduces operating noises both within the valve itself and throughout the entire hydronic system.

"A new valve stem design is used: it is barrel-type, made of extra-rugged, non-corrosive hard-chrome-plated Monel. The stem is attached in such a manner that it is self-aligning and actually utilizes line pressure for more effective seal-off without 'bind' on opening or closing. This self-aligning or 'floating' feature also reduces wear and friction loss.

Convenient Terminal Panel

"A new, exceptionally convenient terminal panel is also a feature of both the Zone-A-Flow and Zone-A-Loop valves. Wiring is done by simple, speedy 'push-in' connections. A handy wire stripping gauge is set at the top of the panel. Wires can be disengaged immediately by just depressing a small pin set beside each of the wire holes."

Another feature is the visible, automatic recycling manual operator. This is a notched wheel which turns with the stem and clearly shows stem position at all times.

"During initial installation or in case of power cut-off, the valve may be operated with a mere touch of the fingertips," it was pointed out. "When power is restored, the valve will automatically cycle to the position called for by the thermostat.

"The valve bodies have bayonet-type attachment lugs and are one-piece cast in low-zinc-content brass. Bodies will withstand surging system pressures."

Each valve may be matched with either of two "companion" thermostats, White-Rodgers states: the recently introduced "D'LUXline" with the new "Straight-Line Look" or the "Fashion" style with its hinged cover.

Both valves and thermostats are available in either 2-wire or 3-wire wiring type. A built-in line voltage auxiliary switch is also available on both style valves. The control system wiring is virtually all low voltage.

The valves are suitable for zoning hotels, motels, shops, and other commercial construction and meet all FHA requirements for zoning split-level homes, the company said.

Ray B. Hayter Promoted

GLENDALE, Calif.—Ray B. Hayter has been promoted to manager of General Controls Co.'s Wichita, Kan., branch office. He was formerly assistant branch manager in the firm's Dallas office.

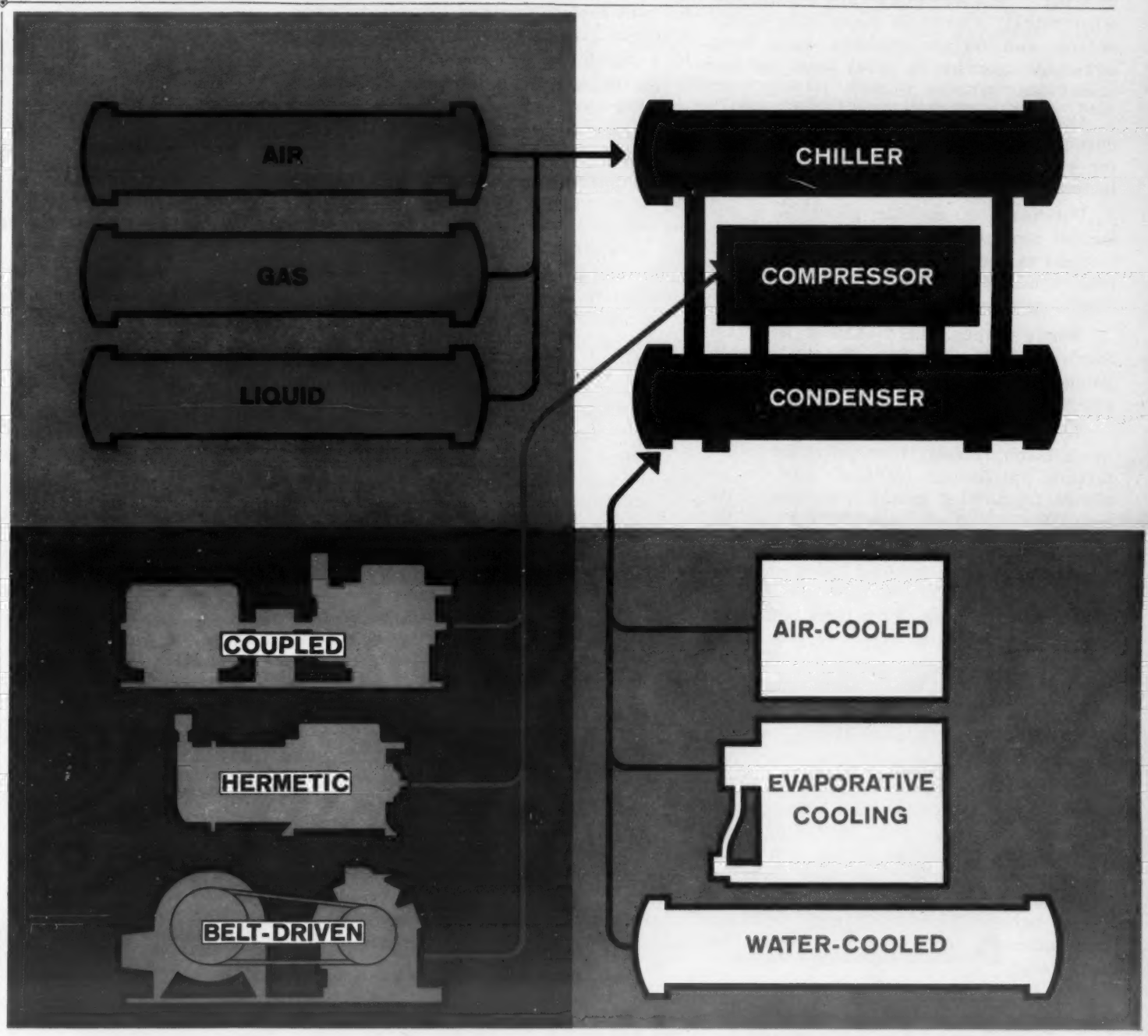
Plant Maintenance Show Set for Sept. In Greensboro, N. C.

GREENSBORO, N. C. — The third annual Southeastern Show, a plant maintenance and engineering exposition sponsored by the three state chapters of the American Institute of Plant Engineers, will be held at Greensboro War Memorial Coliseum Sept. 12-14.

The group will also sponsor a Plant Engineering and Maintenance Seminar to be held at the adjoining Town Hall. J. R. Ogburn, of the Industrial Extension Service staff of the State College School of Engineering, Raleigh, will be chairman of the seminar.

John Harden Associates, of Greensboro and Raleigh, will again produce the show, with Robert E. Zimmerman as show manager.

Products and services will be shown under simulated operating conditions, including heating, ventilating, and air conditioning equipment, it was stated.



"FULL CHOICE" IN CHILLERS

With Worthington you choose chillers with complete flexibility. Chill water for air conditioning, chill brine for process work, chill air for moisture removal. There is never any need for you to compromise job satisfaction when you specify Worthington "Full Choice" chillers.

The coolers are designed for equally efficient heat transfer rates for air and gases, as well as for the conventional liquids. You select the condenser cooling medium—water, air or evaporative cooling. And you have the option of hermetic, coupled or V-belt-driven compressors. Every compressor is from the Worthington V-line. There is no quieter running compressor available today.

Most important—each component is factory-protected for the service involved. Air chillers are complete with properly sized moisture separators and traps. All units are equipped with suction heat separators, to improve over-all efficiency and protect the compressor from damage from liquid slopover.

Standard, factory-installed protective devices include freeze-up switches, crankcase heaters, high-discharge temperature Klixons, pump-down relays, high-low pressure cut-outs and operating gages.

Hermetic compressors are protected additionally by filters, dryers, moisture indicators, low-pressure relief valves and against motor burnout. And, of course, belt-driven units include safety guards.

Result? Worthington's "full choice" of chillers assures you of a reliable, low cost system tailored exactly to your needs.

For full information, contact your nearest Worthington representative, or write Worthington Corporation, Air Conditioning Division, Section 12-46, East Orange, N. J. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.

WORTHINGTON

PRODUCTS THAT WORK FOR YOUR PROFIT

15

Where the Money Goes—Who Is Spending It (and Getting It)

RECESSION or no recession, periodic economic ups-and-downs notwithstanding, American citizens on the whole (including those who occasionally are in the hole) have spent more money each year and *every year* since 1948.

To cap this 12-year progressive performance, in 1960 our personal purchases rose to an all-time peak of $328 billion, *despite an overly publicized recession.*

Who, in the face of widespread unemployment, is spending all this dough, and on what? And where are they getting the wherewithal? Obviously many lines of endeavor, and certain products, have been suffering. Question is, what takes up the slack? And who or whom?

Personal savings changed little in ratio during this ructious time—they still account for approximately 5% of annual personal income in the U.S.A.

Purchases of durable goods have remained constant (13% to 15% of personal income) in the last dozen years, too. Likewise, consumption of soft goods (40% of family spendings) haven't altered much.

Where's the joker? Could be this: Services of all kinds have become the big gainer. They're now up to 40% of all family expenditures. A-ha!

To be sure, costs of services have risen much faster recently than prices of manufactured products. (Medical care is an almost frightening example; likewise, education.)

But that isn't the whole story, by any means. Fact is, the heralded "do-it-yourself" movement apparently is mythical. People simply want more done for them nowadays, and are willing—yea, *eager*—to pay others to do it.

In these United States leisure has become a way of life, and self-indulgence a creed. Don't knock it, fellow citizens, without examining its economic benefits to one and all. Forsooth:

What is happening is this: a steady drift of endeavor *away* from fluctuating basic industries (farming and mining and manufacturing) *toward* more even-tempered occupations — such as utilities, communications, banking, merchandising, repairing, entertainment, and government itself (bureaucracy).

These latter employing categories don't suffer such turbulent ups-and-downs as do the so-called "basic" industries, and their rise should herald a new outlook on economic life in our advanced nation.

Industrial production is subject to cycles of undersupply and oversupply, because forward scheduling is based on (let's admit it!) guesses. Therefore, industrial workers never can be assured of year-round employment.

Moreover, in the last few years, automation has enabled us to dig up or harvest far more raw materials with much less labor. Likewise, manufactured products of all sorts have benefited from advanced technology.

So, the stark spectre of unemployment amongst the unskilled has become a dark cloud over our land. On the sunny side:

Higher wages for the skilled, plus continuing prosperity, have increased demands for a myriad variety of services — from luxury vacations to feminine hair styling to dry cleaning; from photographic finishing to boating and skiing; from golf club memberships to hunting lodges.

According to the Department of Commerce, at least three billion dollars a year is spent on parking and repairing our automobiles! That single statistic helps explain another Department of Commerce figure, to wit:

During the last 30 years, industrial employment has risen from 15 to 21 million (about 40%), while employment in service trades has leaped from 14 to 30 million—114%!

Right there you can see a good explanation why the index of industrial production has sunk in recent recessions without appreciably affecting the GNP (gross national product)—or DIF (disposable income of family consuming units).

Thus, temporary calamities in metals fabricating, automotive, or other huge industries should give us less and less cause for worrying about the health of our entire national economy.

More and more people are working in cycle-defying *service* occupations. Therefore, they tend to stabilize America's total economic picture. If you, valued reader, are a serviceman, be of good cheer. And be proud! You're now in the saddle. Ride 'em, cowboy!

NHAW'S POLICY IS TO COOPERATE WITH ALL ALLIED GROUPS — "WIB" BULL

Northamerican Heating
& Airconditioning
Wholesalers, Inc.
Columbus, Ohio

Editor:

Of course, there are always individual members of any association who have their own thinking or reaction to any specific problem of the industry, but the thinking of any individual does not, as a rule, represent the official policy of an association.

It is the policy of NHAW to cooperate in every way with other trade associations throughout the continent, who are even closely allied to the specific segment of the industry which we represent. It is our belief that much more can be accomplished through cooperation and understanding of the other person's point of view at any time a possible conflict of interest or difference of thinking may arise.

Members of NHAW have no special privileges of "God-given right" to any consideration which they do not deserve and earn. This certainly is in keeping with the free enterprise system under which we live, believe in, and will fight for.

We are confident that, in general, our friends in ARW will be in accord with our thinking.

W. R. "WIB" BULL,
Executive Director.

DEFENDS 'EXTRA ITEMS' USED IN RESIDENTIAL SYSTEMS DESIGNED BY ENGINEER

Frank M. Bates, P.E.
Philadelphia

Editor:

The concluding paragraph of Irvin Slight, Jr.'s letter (April 17) definitely indicates the fallacies of contractor-designed systems, inasmuch that it admits that their 40-year-experience man has been called upon by other contractors to solve some of their problems.

In general, "home jobs" are not usually designed by professional engineers, the principal reason being that owners do not desire to pay the required fee. The installations are concluded by either contractors or sales representatives who have their own interests in mind.

Anyone qualified to design a large commercial or industrial installation most certainly could develop a simple home installation, even though Mr. Slight feels that the "extra items" may have no value, or perhaps he may consider fire insurance on the home is unimportant. Many times these "extra items" have a distinctive value unknown to him.

It should be remembered that "paying" a little more is of considerable advantage over paying too little and not receiving the results anticipated.

State laws cover qualifications for registration of engineers and, as such, they are the only authorized persons permitted to design and specify installations. Accordingly, if anyone has the ability to meet the requirements, they should apply to their respective Registration Boards for license, or withhold adverse comment of the professions.

Personnally, I have witnessed many contractor "designed" and installed jobs that have most certainly proven unsatisfactory in every way, and the cost to the owner was entirely too high for the value received.

It may be that Mr. Slight does not like to be under the control of the engineer inspecting his work.

FRANK M. BATES, P.E.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

HEH-HEH--- IT'S THE OFFICE PICNIC, 1946--- LOOK AT HOW YOUNG BIGDOME WAS! HAIR AND EVERYTHING---
THAT'S GOOD! THEY'RE THE ONLY ONES WHO HAVEN'T CHANGED--- THEY LOOKED JUST AS BAD IN 1936---
BELA LUGOSI LOOKED BETTER THAN THEY EVER DID!
THAT HAIR ON BIGDOME--- WASN'T THAT THE TIME HIS TOUPEE CAME OFF IN THE SOFT-BALL GAME?
IS THIS BESSIE BUSTLE? WOW! YOU'D NEVER KNOW HER TODAY! BOY! HAS SHE FAILED!!
BIGDOME SHOULD HEAR 'EM! HE THINKS HE LOOKS LIKE SAL MINEO---
WHEN YOU AND I WERE YOUNG, McGEE--- --AND WE STILL ARE.
THANX AND A TIP OF THE HATLO HAT TO DICK HUFNAGLE, 1031 WYANDOTTE TR. WESTFIELD, N.J.
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They'll Do It Every Time

by Jimmy Hatlo

AIR CONDITIONING HEATING & REFRIGERATION NEWS
F. M. COCKRELL, Founder

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From the Files of the News

25 years ago . . .

Manufacture of Chrysler Airtemp air conditioning equipment is to be concentrated in Chrysler's Dayton plant, company officials recently announced, with remodeling and new machinery anticipating the move. . . . Air conditioning will occupy the center of attention during the jointly arranged ASRE-ASVE meeting in Buck Hill Falls. Willis H. Carrier, board chairman of Carrier Engineering Corp., will preside. Topics scheduled for discussion include: "Theory and Practice of the Heat Pump," by C. W. Chamberlain, Michigan State college; "Application Factors Which Govern the Selection of 'Freon' Refrigerating Equipment for Air Conditioning Service," by J. R. Hertzler; and "Water Supply as Affected by the Demand for Summer Air Conditioning," by a vice president of Community Water Service Co., Washington, D. C.

Increasing demand for air conditioning in apartments and office buildings was noted in a recent issue of "Buildings and Building Management" magazine, with a plan of gradual installations to satisfy demands suggested in the article. . . . To prove that its Master 6-36 refrigerator was "leak-proof" Frigidaire recently dropped such a model approximately 100 ft from the Goodyear dirigible Puritan into Biscayne Bay off Miami. Results—the condenser was battered in, but no leak occurred in the condenser or the refrigerant lines.

"Balancing heat loss is air conditioning's job," A. C. Willard, U. of Illinois president and air conditioning authority, noted in a radio address before the Junior Academy of Science, "and to preserve the heat balance the air conditioning engineer has devoted his energies to the factors on the heat loss side of the equation—since there is little he can do on the other side."

10 years ago . . .

Proposals to limit licenses issued to certain contractors such as dairies so that their employes could not legally service equipment not owned by the dairies are under consideration in Detroit. . . . The refrigeration service industry should establish its own program of civil defense because when disaster strikes "there is a definite need to care for refrigeration equipment and food preservation and there are no more capable people of handling this than servicemen," declared George Schuld, safety director of RSES.

James Foley's success in cracking the Toledo institutional market was exemplified with the $25,000 installation in the St. Luke hospital. The contract called for Foley to air condition the operating room and two other rooms, install a blood bank refrigerator, completely outfit the 39 by 66-ft kitchen and coffee shop with stainless steel equipment and provide complete refrigeration facilities. . . . The NEWS editorialized on the problems air conditioning contractors have in bidding on jobs to the architect's specifications because the architect's knowledge of air conditioning is sometimes antiquated and his specifications unworkable. The editorial stresses the importance of architects consulting with qualified engineers, and contractors working closely with architects, so that 1951 specifications are in line with 1951 equipment now available.

A packaged Typhoon air conditioner that eliminated the need for a special refrigeration system used in the processing of color films was installed in a Texas processing plant. Although the unit was installed solely for employe comfort, it was soon found to have additional benefits by maintaining the chemicals and processing water used within a 2°F differential. . . . A Los Angeles company has found a new use for its Mobile air conditioning units—cooling the wings of B-36 bombers under construction at Lockheed Aircraft Corp. while the wing gas tanks were being experimentally sealed with a new plastic sealing compound which had to cool properly to seal.

190 Cool Apartments

NEW YORK CITY — Central air conditioning is one of the features of the new Empire House, a 190-unit apartment dwelling which covers an entire block-front on Third Ave. between 70th and 71st Sts.

Phil Rich Rushes New Plant, Office Bldg.

HOUSTON, Texas—Rush construction of a new 52,000-sq ft plant and office for Phil Rich Fan Mfg. Co., Inc., has started on a five-acre tract at 6000 Telephone Rd. here.

The $250,000-plus building will be of reinforced concrete and masonry throughout. Plans call for initial air conditioning of the 3,700 sq ft of office space. A cafeteria is provided for Rich's 100 to 200 people.

"Expansion and diversification make it imperative that we get into our new plant by August," said Hershel Rich, president. "Our line of Windmaker fans is selling as never before. We're working on our third sizeable Navy contract, this one for submarine fans. And we have four new products, developed by our own design engineers, under patent application and ready to manufacture."

This will be the sixth new Windmaker plant in 16 years for the company.

The business was started in 1945 by Phil Rich, now chairman of the board, to assemble household circulators and attic fans for local use. Continuous expansion has put the "Windmaker" label on a complete line of residential, commercial, industrial, marine, and special purpose fans, many of which are distributed worldwide, it was pointed out.

Rich also makes specialized components for other manufacturers, blades, hubs, guards, sheet-metal units including roll form, spun, deep-drawn, stamped, spot-welded, and all types of welded fabrication. Much of the plant equipment is unique, designed and made by the Rich firm, the company said.

Original Equip. Mfrs.:

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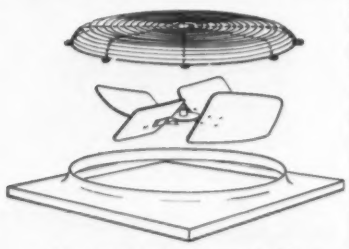

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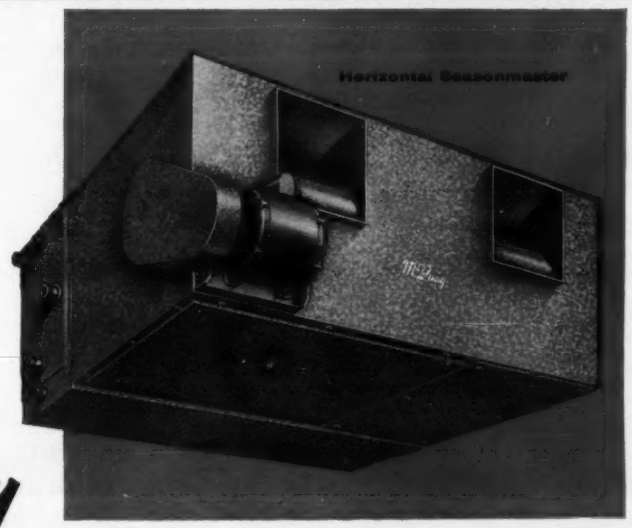

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AIR CONDITIONING • HEATING • REFRIGERATION

Cap Tube Systems

By Henry Ehrens, President,
Sealed Unit Parts Co., Inc., New York City

Part 4

Author of this series has had many years of experience with hermetic systems doing wholesale repair work as well as wholesale rebuilding of motor-compressor units in addition to manufacturing replacement parts and specialty items for the trade.—Ed.

You know, this business of a unit running for years and then suddenly developing a crazy condition is no joke. It has happened to me plenty of times and I imagine to you as well.

I remember the first time it happened to me many years ago. A domestic refrigerator with a sealed R-12 system was brought into our shop with the complaint: freezes then defrosts while running.

Well, we put the box on test, and no sooner did the whole evaporator frost up when the frost started to disappear. Suspecting a moisture condition, I heated the capillary outlet, and, sure enough, a rush of refrigerant surged through and then, after a few minutes, the same plug-up occurred.

There was no possible mistake or guesswork; this was a definite moisture condition. Upon close examination of the entire system we found there was no possible way of anyone adding gas to the system or getting moisture in it. The factory pinch-offs were original. Where did the moisture come from?

When I questioned the owner, he stated that he had had the box for seven years and never had a serviceman until the week before when one morning he noticed the refrigerator had defrosted and the unit wouldn't start. All the repairman did was replace a defective starting relay, and ever since the box had been acting crazy, frosting and defrosting.

Well, at least that was one clue, but what has an external electrical defect got to do with an internal moisture condition? When I discharged the unit in order to install a drier, I found the answer. The refrigerant had a burnt odor, and even though the unit ran, I knew that the winding was partially cooked.

The defective relay kept the starting winding out of the circuit and wouldn't allow the rotor to start. The high amperage, as a result of locked rotor, caused the motor to cycle and overload. This condition probably happened at night and it was not until morning that the owner noticed that the evaporator was defrosted and called the service engineer.

Cycling all night on overload caused the winding to overheat and partially break down the insulation. There are many substances given off when the insulation breaks down, and one of them is water. On a complete breakdown or burnt winding, as much as a half teaspoon of water can be given off.

While this case had nothing to do with capillary tubes, it does show that a seemingly impossible condition is not impossible at all if you understand the reason.

Evaporator Wouldn't Frost Up

Another case does illustrate a problem that can occur with cap tube systems.

This particular day I happened to be in the receiving department when a service contractor named Sam came in all perturbed. He said he had taken out a repaired hermetic compressor for a domestic refrigerator and after he installed it in the cabinet in the customer's home the evaporator wouldn't frost up all the way and the unit ran continuously.

He returned the unit to us, and when we put it on test, the evaporator froze all the way as it should. Sam cussed and scratched his head, at a loss for words, and he was muttering to himself when he left.

Next morning Sam phoned with the same complaint, so I promised to drop by to see what I could do. When I arrived at the house, the owner ushered me to the kitchen, and there was Sam, fit to be tied.

I touched the dome. It was hot, and I heard Sam mutter "been running continuously." I opened the refrigerator door, and sure enough the evaporator was only three quarters frosted. I touched the cap tube, and it felt warmer than it should be. We turned the box around.

Strainer Was Too Near Hot Oil

There was the trouble right in front of our eyes. The strainer was in direct contact with the bottom of the dome, right where the hot oil was. I asked Sam to gently bend the strainer away from the dome. In about five minutes the evaporator froze all the way and the unit cycled.

I explained to Sam that what had happened was that the heat of the dome reheated the liquid refrigerant in the strainer and formed gas pockets in the cap tube. Instead of a steady stream of liquid entering the evaporator, the cap tube was spitting first liquid, then gas, then liquid. This intermittant dribble kept the evaporator starved.

The point I want to bring out is that not only should the strainer be kept away from heat but that the cap tube should form some sort of heat exchange with the suction line for at least 2 ft from the evaporator towards the condenser, being either taped or soldered to the suction line.

This situation doesn't happen often, of course, but the point is that you must understand cap tubes to recognize the cause of any trouble that may come up, even for the first time. It's not only that the cap tube is critical but the entire system is critical.

(To Be Continued)

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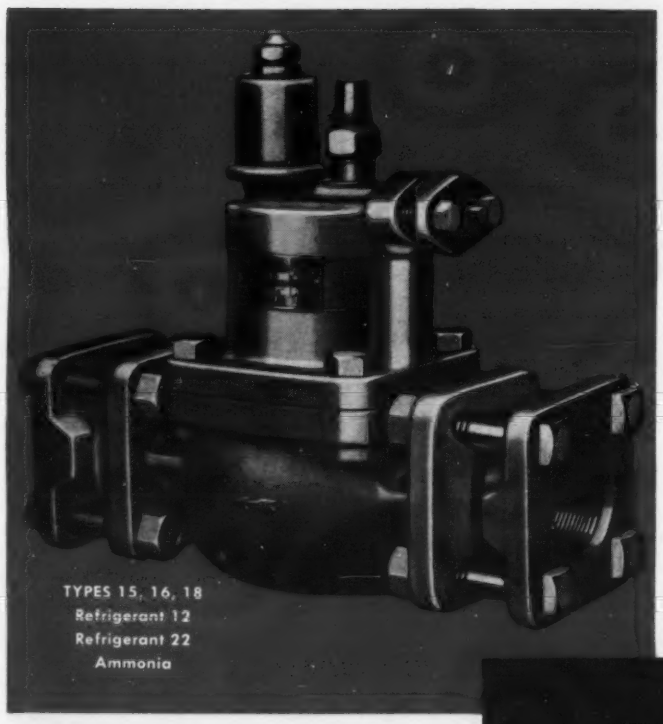

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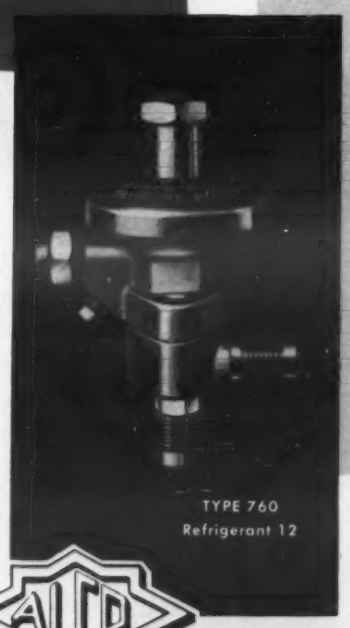

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NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

RACCA Efforts May Widen Calif. License Act

LOS ANGELES—Recent efforts of the Southern California Chapter of RACCA to have certain types of refrigeration work placed under the California Contractors License Act have been met with favorable acceptance by a State Assembly Committee, it was reported.

According to Henry Ely, executive secretary of the RACCA chapter, the California Assembly Committee on Government Efficiency & Economy has approved the recommendation of the contractors' association calling for passage of Assembly Bill No. 694.

Ely, who appeared before the committee last March 28 to urge the bill's approval, said that the measure would provide coverage for various types of refrigeration mechanical equipment which are not normally fabricated into a building or structure. Formerly such installation of the equipment was not subject to the California Contractors License Act.

In addition to covering refrigeration and air conditioning equipment, the bill which was sponsored by labor also applies to other types of mechanical fixtures or systems that are a non-fabricated part of structure construction.

He explained that with the approval of the committee the measure goes to the California Assembly for adoption, having previously been approved by a California Senate Committee.

"When the bill is enacted into law," Ely said, "it will provide further assurance to customers that work is being performed by qualified contractors who meet standards established by the State Contractors Board."

Calif. Accoustical Contractors Now In Class C-2

SACRAMENTO, Calif. — Acoustical contractors are now included in Class C-2 with insulation contractors by action of the Contractors State License Board at its recent meeting.

The board deferred action on the proposed new classification for water softener installers.

Effective May 12, Section 754.8 of the Regulations of the Contractors' State License Board will read:

"754.8 Class C-2—Insulation and Acoustical Contractors. An insulation and acoustical contractor is a specialty contractor whose principal contracting business is the execution of contracts requiring the art, ability, experience, knowledge, science, and skill to intelligently install any insulating media in buildings and structures for the sole purpose of temperature control, and examine surfaces, prepare acoustical layouts, select and install preformed architectural materials in such a manner that building and construction insulation and acoustical work can be executed and installed."

BTU Meter Registers Chilled Water Use of 2 CBS Divisions

NEW YORK CITY — When the 1961 air conditioning season begins, Columbia Broadcasting System, Inc. here, for the first time will be able to measure exactly how much chilled water for cooling is being consumed by each of two separate CBS divisions.

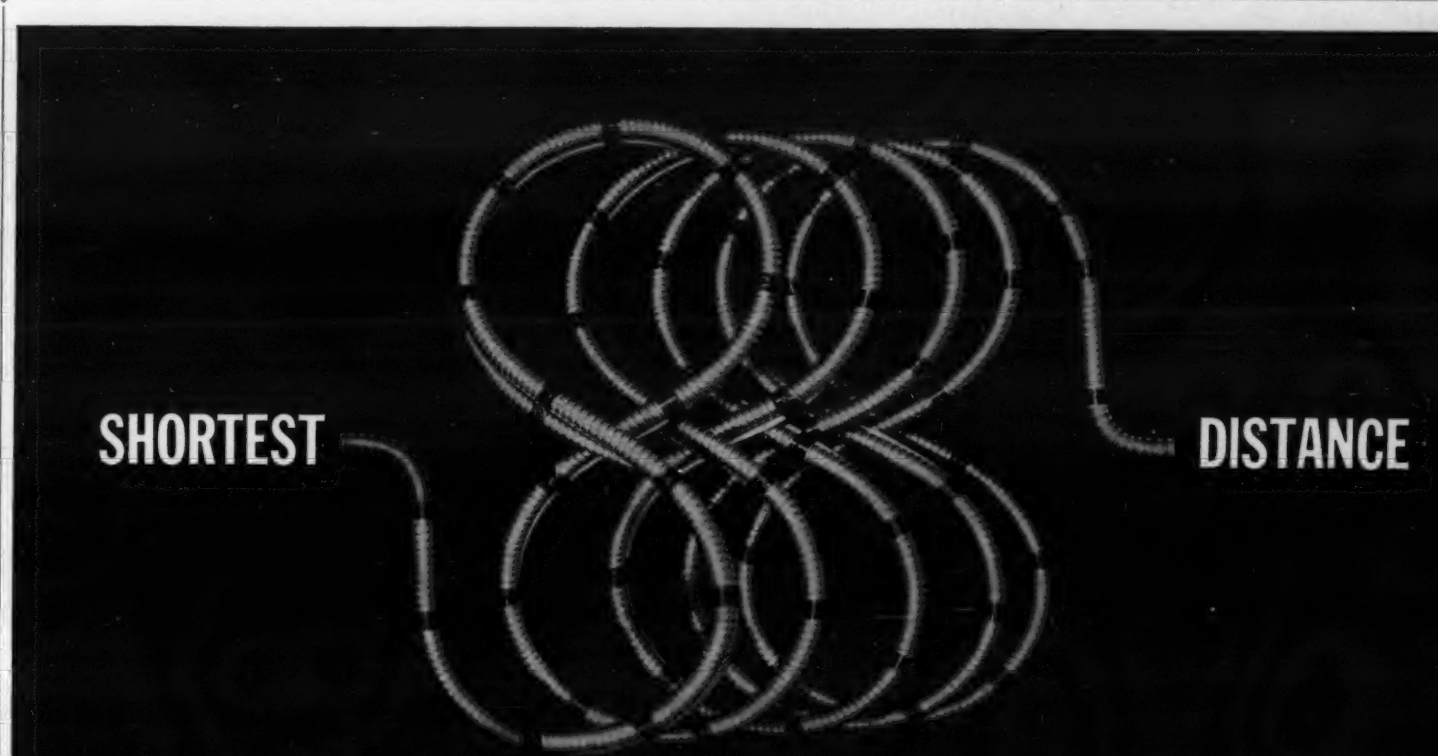
This information is a prerequisite for determining how much of the cost of this service should be charged to each division and for measuring the over-all cost, per Btu ton, of chilled water used in the air conditioning system.

The scope of this building management problem is more clearly understood when it is realized that the two CBS divisions are physically separate from each other. Although consuming chilled water from a common source, they are in different buildings of CBS' multi-building Manhattan headquarters.

The chilled water, in fact, is piped beneath 52nd St., from the CBS Radio building at 49 E. 52nd St., which houses the refrigerating plant, over to the main building at 485 Madison Ave.

The data required to find out who should pay how much in this two-building situation and to determine over-all cost of the air conditioning service will be obtained from a Pollux Mechanical Btu Meter. Pollux Btu meters are distributed in the United States and Canada by Air Conditioning Equipment Corp., New York City.

"These meters have been installed in a number of multi-tenant commercial buildings, including shopping centers and airports (New York City's Idlewild, for example), but the CBS installation is believed to be the first application of a Pollux meter to solve a consumption measurement problem involving two major, completely-separate office buildings," Air Conditioning Equipment Corp. officials pointed out.



BETWEEN ANY AIR CONDITIONING JOB...AND A PROFIT

(IF THIS CONTRADICTS WHAT YOU LEARNED IN SCHOOL ABOUT STRAIGHT LINES AND SHORT DISTANCES, BLAME IT ON TODAY'S BIG REVOLUTION IN CENTRAL AIR CONDITIONING TECHNOLOGY)

You're looking at a length of Fedders' flexible hermetic tubing. Nearly 40 miles of it is now installed in homes and commercial buildings throughout the U. S. Not one case of failure has been reported to date. This combination of high-grade copper and spiral steel armor is far stronger, far more leak-proof and kink-proof than any hermetic line you could install yourself.

What you don't see in this picture is the FlexHermetic outdoor condenser section and indoor cooling coil connected to the ends of this flexible tubing—*right in the Fedders factory.* This means, of course, that FlexHermetic Unified Remote Air Conditioners come to you complete—evacuated...dehydrated...sealed...charged...and fully tested—all ready to place in position. It means that most of the work—and all of the guesswork—has been taken out of central air conditioning. *It means that installation days and dollars are slashed by up to 90%.*

Hundreds of air conditioning/heating contractors and installers have discovered that this revolutionary Fedders technology has vastly expanded their market for air conditioning ...has increased the number of jobs they sell...has paid them a greater profit on every job.

Turn the page and see on how many central cooling jobs the world's first and only unified remote air conditioner can pay you an extra profit.

Billings, Mont. Dealer-Contractors To Get Silver Shield Story May 16

BILLINGS, Mont. — At a meeting scheduled for Tuesday evening, May 16, in the Hospitality Room of the Montana-Dakota Utilities Co. here, heating and air conditioning dealer-contractors from the entire Billings marketing area will get the full story of the Silver Shield Program.

Cooperating with the National Warm Air Heating & Air Conditioning Association is a Silver Shield Action Committee consisting of the following individuals:

Don Steeves, committee chairman, Montana-Dakota Utilities Co.; Walter Ryniker, Ryniker Steel Products Co., Nickel Plate Industrial Site; Robert McCann, Empire Heating Co., Nickel Plate Industrial Site; and Lashley Drell, Drell Heating Co.

Scott Foam To Be In Design Engineering Show

DETROIT—The Foam Div. of Scott Paper Co. will feature Scott Industrial Foam in a variety of cuts, sizes, and pore densities at the 1961 Design Engineering Show in Detroit's Cobo Hall, May 22-25.

Attention at the display will be drawn to Scott Industrial Foam applications for air conditioning, automotive, small engine, and forced air heating units.

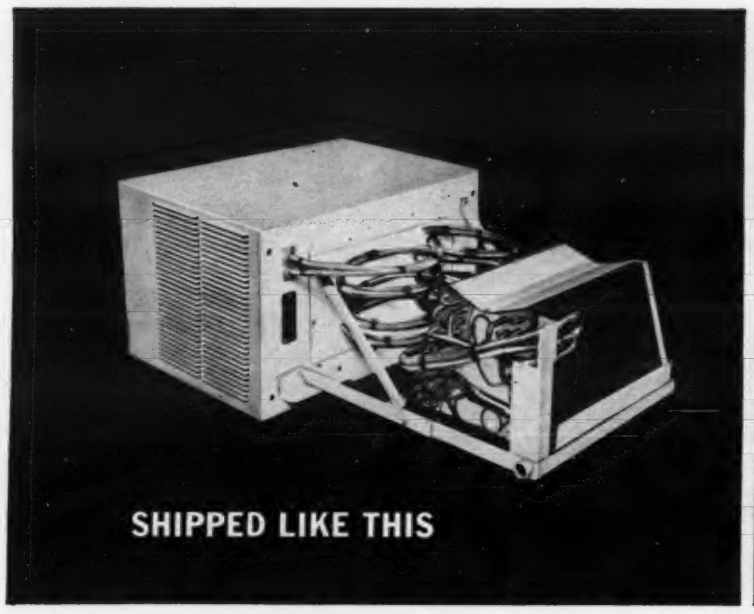
Permatron Moves In Fourth Major Expansion Since 1958; To Add Items

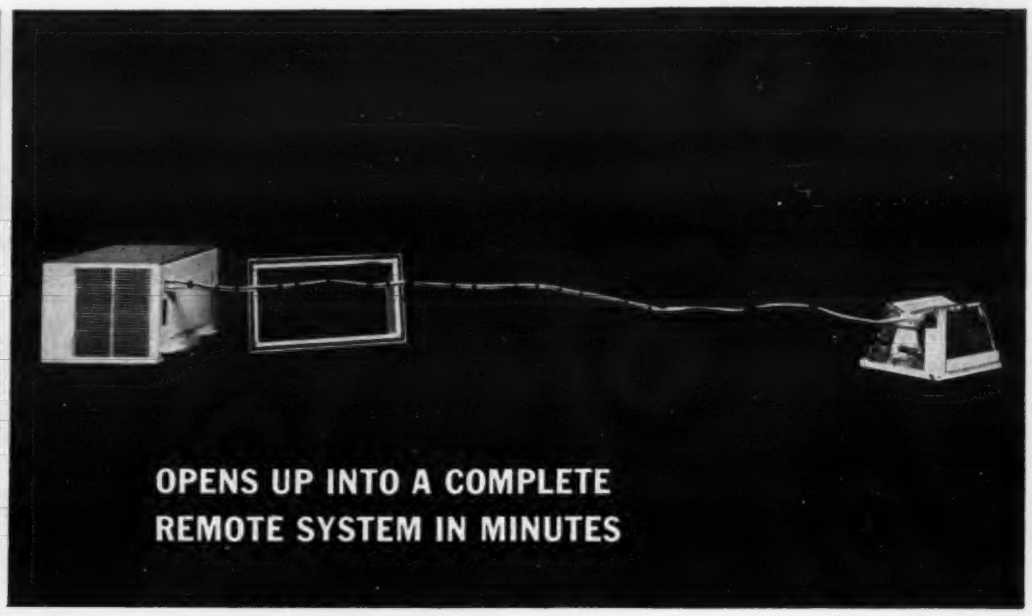
ARLINGTON HEIGHTS, Ill. —The fourth major expansion since 1958 moved Permatron Corp., manufacturer of "lifetime" electrostatic filters, to new and greatly enlarged facilities at 666 E. Kensington Rd.

Jim Blanton, president, reported that several new items will be added to the line starting with a heavy duty professional model air purifier.

Acceptance of the plastic electrostatic filter is now an accomplished fact, Blanton said. First used in air conditioners, then warm air heating, the market has spread to include ventilating systems, aerial cameras, missile tracking equipment, and electronic devices, he stated.

Permatron's export market continues to grow, according to Blanton.





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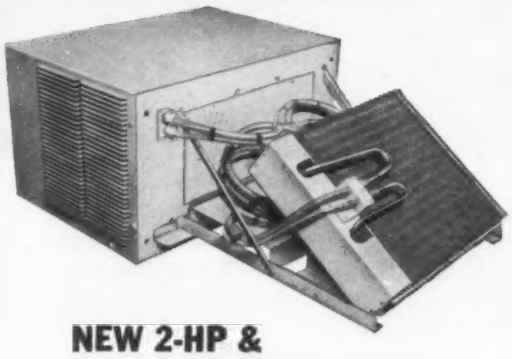
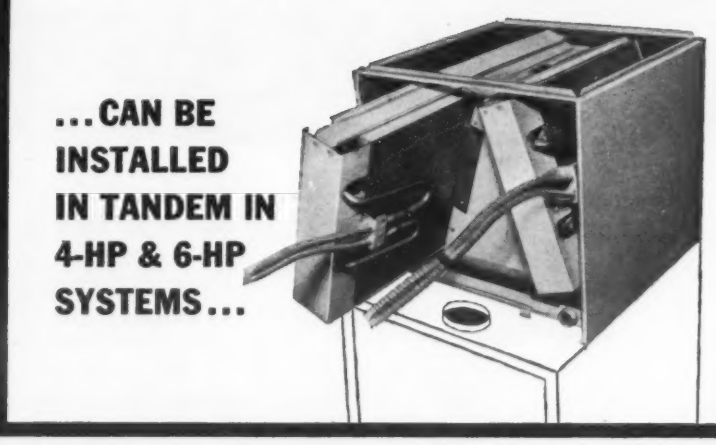
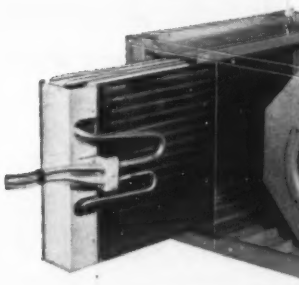




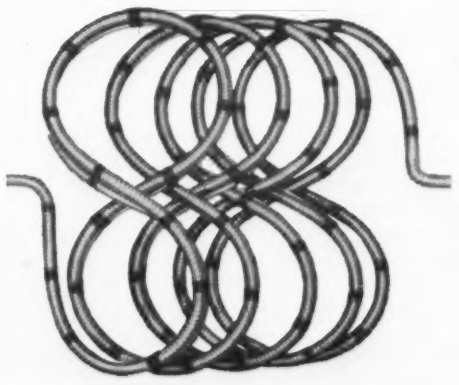


The technology that has caused a sales explosion in residential air conditioning can now solve sales problems for you on other jobs. New 2-HP and 3-HP FlexHermetics with flat evaporators and matching accessories bring this same speed and economy to a wide range of applications.

The competitive advantage which FlexHermetic Air Conditioners and FlexAire Furnaces confer in average-size homes can now be enjoyed in larger houses and in homes with hydronic heating. In addition, these new models open up a whole new market in commercial and industrial air conditioning.

The FlexHermetic with matching blower cabinet and discharge plenum is ideal for smaller retail stores, offices and laboratories. And because the FlexHermetic outdoor condenser can be mounted on exterior walls in a special steel frame as well as on roofs and slabs, multiple installations in the largest commercial structures are practical and economical.

To learn more about the FlexHermetic, mail the coupon today.



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MODULATED HEATING: *NWAHACA To Study Possibility of Regulating Temperature with Varying Volume of Fuel Flow*

CLEVELAND — Instead of merely clicking on and off, will the furnace of the future regulate temperatures by changing the volume of fuel flow . . . that is, by modulated heating?

Actual answers to this and associated questions are now being sought for ducted air heating system dealer-contractors and the industry by the National Warm Air Heating & Air Conditioning Association through its research program which is being conducted at the University of Illinois.

Performance of central gas furnace adjusted for CAC operation and provided with a conventional on-off burner, a gas furnace equipped with a modulating burner control, a central electric furnace with step controlled input and electric duct heaters controlled for individual room thermostats are being compared in the current investigations.

To all outward appearances Research Residence No. 4, the focal point of these tests, at Urbana, Ill., is unchanged from previous heating seasons.

However, changes in the interior construction and insulation have been extensive in order to reduce the calculated heat loss from the previous 91,800 Btuh to its present 64,900 Btuh under design conditions of 70°F indoors and -10° outdoors.

The lower level walls formerly consisted of uninsulated 8-in. concrete block. These walls have now been furred out with 2-in. by 4-in. studdings and the spaces between studs filled with 3-in. thickness glass fiber, batt-type insulation. Plywood paneling has been applied for interior finish.

The crawl space walls have been insulated with 2-in. thick expanded plastic, board-type insulation applied directly to the interior face of the concrete block with a waterproof adhesive.

The objective of all of these changes has been to permit the investigation of modulated heating of the residence with a low heat loss per unit of floor area.

"Modulated input can be accomplished in several ways," it was pointed out. "The energy input to a central unit can be varied according to the heat loss of the house. Individual room control of duct heaters is another means of modulating the total heat supplied to the residence.

"The heating equipment has been installed in such a way that one blower can circulate the air through any of the heating units. Approximately 15 minutes are required to change from any one system to any of the others. An electric water heater allows the chimney to be sealed at times when the electric units are in use.

"Energy input to any of the systems can be determined from meters installed in the electric and gas lines. Indicating and recording meters permit determination of the exact energy input to the house which in turn will allow a precise determination of its heat loss.

"Thus, the measured and calculated values of heat loss may be compared under a variety of outdoor wind and temperature conditions."

'Genie-Air' Names W. C. Walter

LOS ANGELES — "Genie-Air" Products here, manufacturer of the new "Genie-Air" industrial ventilators, has announced the appointment of W. C. Walter as national marketing manager.

W. C. Walter

Walter was formerly general sales manager of the Norge Heat Div. and the Ingersoll Conditioned Air Div. of Borg-Warner Corp.

Walter's first assignment will be expansion of the company's distributorship coverage to a national scope from a regional pattern, the company said.

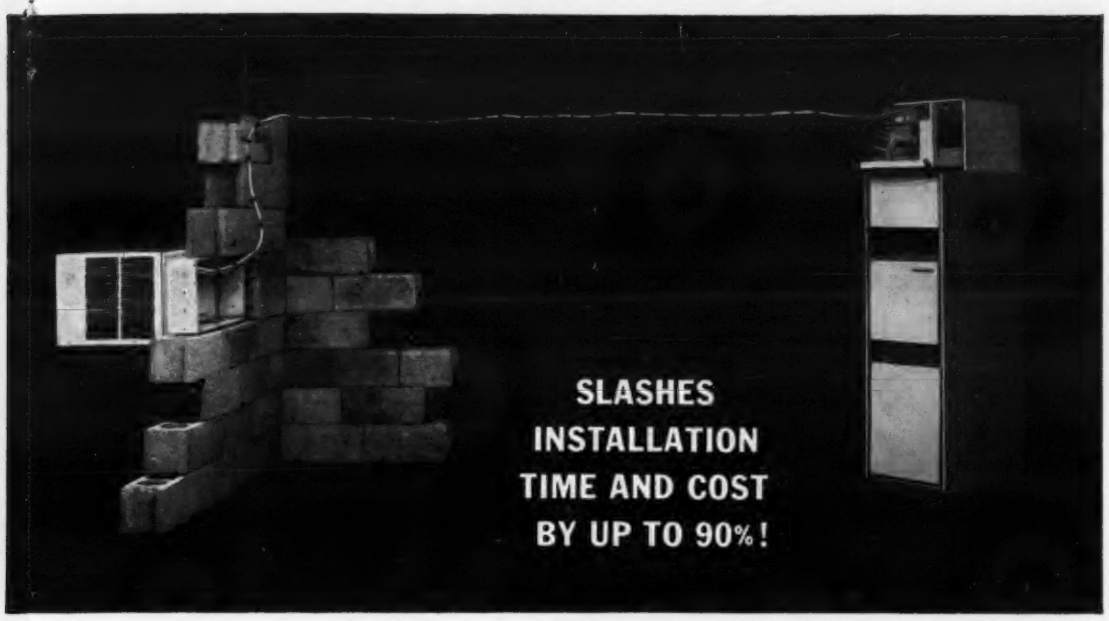
Electric House Heating Covered In EEI Sound Film

NEW YORK CITY — A new 18-minute, full-color sound film on electric house heating has been made available by the Live Better Electrically Program of Edison Electric Institute.

This film was prepared by the *Saturday Evening Post* in cooperation with the EEI Residential Electric Heating & Air Conditioning Committee to show consumers the advantages of electric heating.

The movie illustrates man's progress down through the centuries in bringing warmth into his home. It gives an explanation of the five basic methods of electric house heating as well as showing three actual installations in homes in Connecticut, Indiana, and Virginia.

Orders for the film may be placed through the Live Better Electrically Program, Edison Electric Institute, 750 Third Ave., New York 17, N. Y., at $55 per print, plus postage.



IONIZED AIR CONDITIONING
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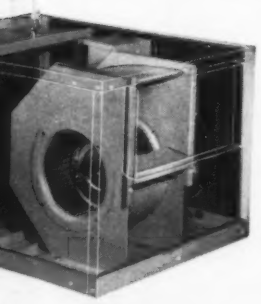
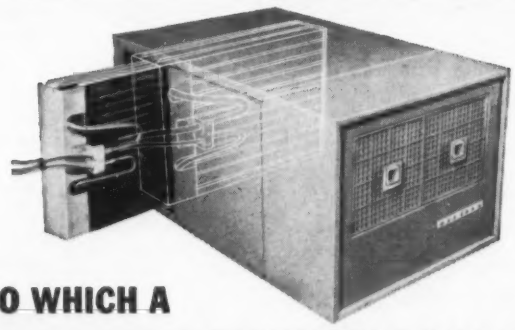


ITO MATCHING
NETS...



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FOR "FREE BLOW" INSTALLATIONS

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New **ANEMOTHERM AIR METER** *gives you*

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Static Pressure

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The new model 60 Anemotherm Air Meter helps you balance heating, ventilating and air conditioning systems the modern pushbutton way. It puts air velocity, air temperature and static pressure at your fingertips . . . pays for itself through time saved on only one major job. • **Write for Bulletin 55 giving all essential data.**

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ANEMOSTAT CORPORATION OF AMERICA
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Current Literature

Bldg. Design Features

CHICAGO — The design and maintenance features of more than 10,000 buildings are described in a new, 170-page book, "Building Maximum Profits into Income Property."

The book is based on data gathered by the Los Angeles chapter of the Institute of Real Estate Management, an affiliate of the National Association of Real Estate Boards, the latter group reported.

The book is divided into three sections, one dealing with problems involving apartments, and a second covering office, commercial, and industrial buildings. The third section is an exhibits notebook.

Among the topics discussed are air conditioning and plumbing. The exhibits include charts, tables, and illustrations "filled with technical information on heating costs, air conditioning . . . and other topics."

Copies of the book may be obtained for $5 each from the Institute of Real Estate Management, 36 S. Wabash Ave., Chicago 3, Ill.

Portable Electric Tools

SYRACUSE, N. Y. — A new 34-page buying guide describing 72 portable electric tools for maintenance crews, heating, plumbing, and air conditioning contractors and others is currently being offered by The Porter-Cable Machine Co., Syracuse 1, N. Y.

Complete information includes detailed specifications, application of products, and numerous photographs of each tool in use.

Motor Starter Enclosures

SCHENECTADY, N. Y. — "Stainless Steel NEMA IV Enclosures" — Bulletin GEA-7324, two pages — describes General Electric's stainless steel NEMA IV enclosures for watertight applications of manual and magnetic motor starters.

Pictures show typical stainless steel enclosures that are available for starters up to 200 hp, 600 volts. Other photos show construction features and how stainless steel enclosures harmonize with other stainless steel equipment, according to General Electric Co., Schenectady 5, N. Y.

Cooling Towers

LOS ANGELES — Brochure CH-5625, descriptive of Drayer-Hanson's 13-model (5 through 80 nominal ton) line of cooling towers, has been readied for distribution to those concerned with both air conditioning and commercial refrigeration condenser cooling water applications, it was announced by Drayer-Hanson Div., Hi-Press Air Conditioning of America, Inc., 3301 Medford St., Los Angeles 63, Calif.

The three-color publication devotes much of its four sides to selection aids and performance data, according to the announcement.

Several step-by-step examples are set forth. Other tables chart such factors as: (1) entering and leaving tower water temperature; (2) water flow gpm; (3) nominal capacity tons refrigeration.

Dust Spot Test

BOSTON—A reference sheet, Dust Spot Test—What Is It?" is available from the Sturtevant Div., Westinghouse Electric Corp., Damon St., Hyde Park, Boston 36, Mass.

This publication explains why the soiling effect of air is a useful index to its dust content and how this index is used to determine the efficiency of air cleaners in the U. S. Bureau of Standards Dust Spot Test. One side of the publication (Bulletin B-5210) discusses details of how the efficiency of all types of air cleaners is measured by the U. S. Bureau of Standards Dust Spot Test. The reverse side references other Westinghouse booklets on various aspects of electronic air cleaning.

Tracing Conductors

LYNBROOK, N. Y.—Details of a new instrument designed to speed the tracing of electrical conductors are available from a new catalog sheet offered by the Pyramid Instrument Corp., Dept. C.T. 10, 630 Merrick Rd. here, maker of "Amprobe" snap-around test instruments.

"The catalog sheet describes two methods by which one man can trace conductors in pipe, conduit, and non-metallic sheathed cable in one tenth of the time these jobs normally require," it was stated. "Line drawings show schematically how these two methods are done."

Motor Application

ST. LOUIS—Century Electric Co., St. Louis 66, Mo., has issued a new 1961 Motor Application Guide, Bulletin 010.

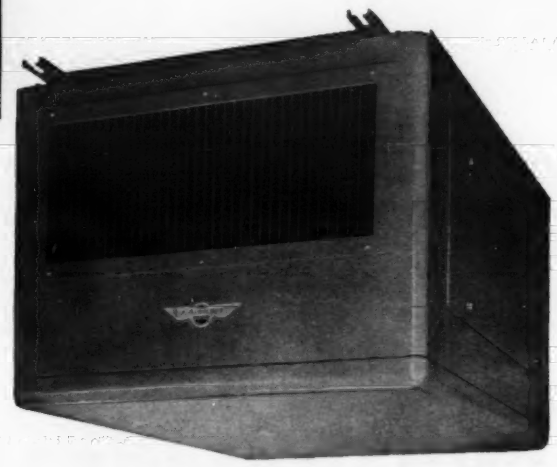
This is a 16-page bulletin which describes Century's broad line of single phase, three phase, and direct current motors. Gearmotors and selective speed drives are also covered.

Two motor selection charts are included: matching motor characteristics to specific applications for single phase and polyphase and direct current motors. Polyphase and single phase motor characteristics are discussed, and rating and dimension tables are included.

Keyed to Profit!

LARKIN

Year 'Round AIR CONDITIONER



5 Models — 2 to 10 Tons

COOLS OR HEATS - DEHUMIDIFIES - FILTERS - CIRCULATES AIR

Ideal for:

STORES
OFFICES
BAKERIES
RESTAURANTS
BARS AND GRILLS
CLINICS
FLORISTS
MEAT CUTTING ROOMS

LOW INITIAL COST!
Purchase price is moderate for a unit with this high quality construction, performance, endurance.

EASY TO INSTALL!
Time is money in your business. The LARKIN Air Conditioner is engineered to make installation simple.

EASY TO SERVICE!
Replacing filters from the bottom is simple. Side panels easily removed for services of internal parts.

FACTS AND FEATURES GIVE PROOF

- Larkin air-conditioning coil—eight fins per inch, continuous fin, staggered tubes, for highest efficiency, lowest operating cost
- Heating coils for use with steam or hot water
- Compact cabinet, all-steel, rust-resistant, beautifully finished with baked-on enamel
- Fiberglas insulation
- Pressure-type, centrifugal, dynamically balanced, forward-curved fan wheels
- Self-aligning bearings
- Resilent base motors on adjustable mounts
- Two-direction, adjustable discharge grille
- Easily removed, throw-away filters
- Slotted hanger bars
- Easily installed, easy to service
- Backed by the engineering skill and manufacturing reputation of Larkin Coils, Inc., one of America's oldest makers of commercial and industrial refrigeration and air-conditioning equipment

CAPACITIES AND SPECIFICATIONS (Cooling Coil)

DIRECT EXPANSION RATINGS 80° D. B. 67° W. B. Ent. Air, 40° Ref. Leaving Air					*Dimensions*		
Model No.	*CFM*	*Tons*	*D.B.*	*W.B.*	*Height*	*Width*	*Depth*
AH-2	800	2.06	61.8	57.4	22¾	30	46⅞
AH-3	1200	3.27	60.7	56.8	22¾	35	46⅞
AH-5	2000	5.39	61.0	56.9	22¾	50	46⅞
AH-8	3000	8.16	60.7	56.8	25¾	61	46⅞
AH-10	4000	10.88	60.7	56.8	31¾	61	46⅞

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Handy Tube Bender

Smoothly Bends any pipe or Tubing ⅜"-1⅛" O. D.

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See your supply house—or write for free folder today.

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NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

TECH CENTER

by FRANK J. VERSAGI

All-Molecular Sieves Core

Kenmore Machine Products, Inc., Lyons, N. Y., produces 100,000 refrigeration driers a week. "Ninety percent of these are molecular sieves driers," states Chief Engineer Stephen Balogh.

The company is the first to take Linde Co.'s suggestion and produce a drier core completely of molecular sieves, rather than of a combination of desiccants. Cooperative development of the product took over a year; Kenmore has just begun production and is attempting now to move the new drier ("KMP Filter-Kore") through wholesalers with a new point-of-sale display rack which the wholesaler may obtain free with the purchase of any combination of drier sizes totaling 250.

Linde Produces Cores To Kenmore Specs

Actually, Linde produces the cores according to Kenmore specifications, then ships them to the manufacturer. At the Lyons plant, the cores are assembled into driers, reactivated under vacuum and heat, sealed, then shipped. (It was made clear to the NEWS by Linde spokesmen that the arrangement with Kenmore is not exclusive in the sense that Linde will work with other companies in developing similar products, while still protecting each company's proprietary interests.)

Balogh is one of the people in the industry who is convinced that molecular sieves is an effective acid remover, as well as a good desiccant. For this reason, he was not reluctant to go all-molecular sieves. In fact, he claims that "by August, 1961, we will have a drier that will eliminate the need for any other method of cleaning up after a burnout than merely running the system with this drier mounted lowside for a specified time." There will be no need to flush, the engineer insists.

(Coming in Tech Center is a several-week discussion of presently advocated procedures for clean-up after burnouts.)

Discussing filtering, Balogh argues that it is unwise to attempt filtration below 50-micron particle size. "Particles smaller than that can float through the system without harm; any attempt to catch them only results in an unnecessarily clogged filter." He maintains that the increasing use of "Mylar" insulation, for example, results in the flow through the system of quite a bit of "unextracted" Mylar. (Incompletely polymerized material, explains a Linde chemist.)

"The floating Mylar is harmless, but it would cause a restriction if it were trapped on a filter core," Balogh explains.

Asked about pressure drop through the new core drier, the engineer noted that several driers have been tested for pressure drop by the United States Testing Laboratories, and "We will have no trouble meeting the standard 2-psi maximum drop."

Servicemen have had some complaints about desiccant blocks breaking down or disintegrating in the field. Kenmore claims that it has experienced no such trouble with its new molecular sieves core.

The sales efforts which are being used to move the new Kenmore drier would normally be reported as a separate news story, rather than incorporated in a Tech Center discussion. However, since the selling efforts are inextricably tied to technical and service considerations, their discussion here is appropriate.

"Right off," admits John Lents, national sales manager, "We recognize the educational job we have to do. We have already started alerting our field men to give demonstrations to RSES groups, for wholesalers, to potential customers."

Acknowledging that even many servicemen who are convinced that molecular sieves is a good desiccant will use other desiccants to remove acid, the company has designed a simple field demonstration "which will show the definite superiority of molecular sieves in this respect," Lents said. (From the brief description of the test given by Lents, the NEWS surmises that a methyl orange visual colorimetric method is used on the demonstration.)

The educational drive aimed at servicemen and wholesalers may change the company's traditional ratio of OEM-to-wholesaler sales. "In the past our sales have been 90-95% OEM," Lents explained. "You must remember that 80% of all OEM sales of driers to manufacturers of household refrigerators and freezers are Kenmore," claimed the sales manager.

With the new educational program and the point-of-sale display, Lents hopes to get wholesaler sales up to 25%, without sacrificing any of the OEM volume. To that end, new production equipment has recently been installed, and facilities for reactivating the desiccant in the assembled driers have been increased.

Another problem: All-molecular sieves driers are smaller in size than their conventional counterparts. A 10-ton drier of molecular sieves, for example, looks more like a traditional 4-ton drier. Recognizing the psychological factor here, Kenmore, in some instances, has deliberately made the drier cartridge larger than it need be, although still smaller than non-molecular sieves driers designed for the same application.

A Word About Price

In view of the admittedly higher price of molecular sieves, the NEWS asked how Kenmore could offer its line of all-molecular sieves driers at competitive prices. Both Linde and Kenmore specified that there is no "deal." No special prices are being granted in the attempt to move the new desiccant. It was implied during the interview, though not explicitly stated, that the fact that the core is assembled outside the Kenmore plant results in significant labor savings which compensate for the higher material cost.

"Foreign nations are becoming increasingly aware of the need for a good drier and are coming to know the superior properties of molecular sieves," noted Lents. "We are going after the foreign market in a big way and expect to capture a major share of it through our already existing operations in Norway and Italy."

At this point, Engineer Balogh became technical again. "The long life of a modern hermetic unit is mainly established by creating and maintaining stable chemical conditions within the refrigeration circuit. The all-molecular sieves drier will do that.

"You will recall that last year, room air conditioner manufacturers had a rash of burnouts. I do not consider it coincidental that those manufacturers who had been wise enough to place a drier on their sealed systems had a much lower rate of burnouts."

Balogh concluded with the opinion that, "In view of the obvious need for eliminating foreign materials from a refrigeration circuit, I cannot agree with the one or two manufacturers who still insist on putting alcohol into their units."

REFRIGERANT-22: HERO or VILLAIN?, the popular 4-week series discussing the advantages and disadvantages of R-22, is now available in reprint form. Single copy, 25 cents; 10-49 copies, 20 cents; over 50 copies, 15 cents.

WITT REMOTE AIR COOLED CONDENSERS

With The Low Silhouette

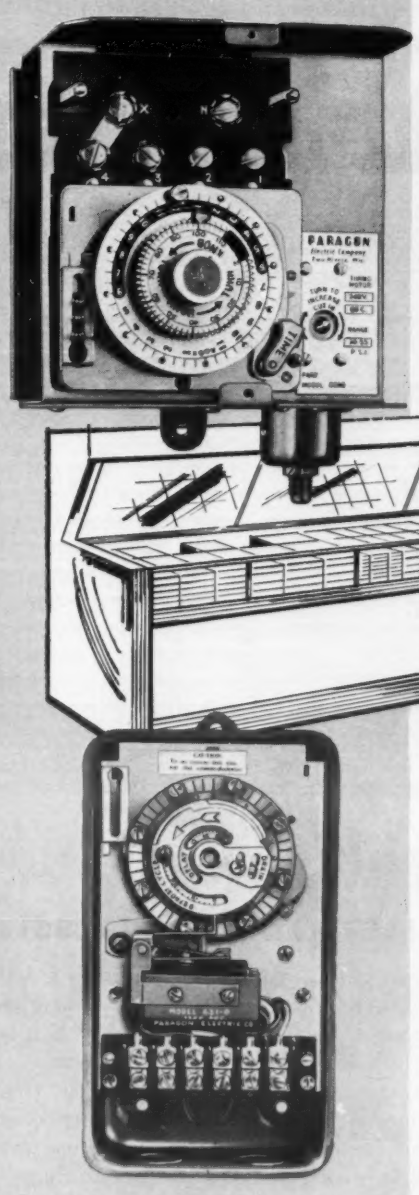
Efficiency, economy, dependability—those three words most effectively describe the operation of Witt Air Cooled Condensers. Available in a wide range of centrifugal blower and fan type models, for single or multiple compressor installations, for indoor or outdoor applications, you'll find a Witt Air Cooled Condenser to handle any size air conditioning or refrigeration system. Winter control systems available for low temperature areas—multiple circuiting available at no additional charge.

Write For Complete Witt Catalog

A. H WITT COMPANY, INC.
940 N. Sycamore Ave., Los Angeles 38, Calif.

Far more Accuracy * Versatility * Dependability

in commercial defrosting with **PARAGON's...**



8200 SERIES D-FROST-O-MATIC

. . . designed for use as time-initiated, pressure-terminated defrost control

Ideal for electric heat and compressor shutdown defrosting. Defrosting periods automatically varied . . . frequency from one to six cycles per day.

A precision-built time control and pressure bellows, the 8200 Series is connected to the suction side of the refrigeration system by a copper tube. Length of defrost is not dependent upon a time cycle, but is terminated when the coils are free from frost. *No unnecessary downtime!*

Exclusive 100% adjustable fail safe. Will transfer switch if equipment is not brought back into a refrigeration cycle by an increase in pressure within a specified period of time. Pressure cut-in is adjustable, too.

Powered by a heavy-duty, self-starting, 4-watt, industrial-type motor. For complete details on the 8200 Series write for BULLETIN 5949.

600 SERIES TIME DEFROST CONTROL

. . . designed for defrosting systems which require a timed fan delay or drain period at end of cycle

With the system-tailored 600 Series you can easily change the frequency of defrost and the length of defrost cycle to meet your load requirements. The time control is perfect for defrost systems having water spray, hot gas fan delay, or electric heat fan delay.

It has three adjustable settings—a pre-delay or pump-down cycle, a defrost cycle and a drain or fan delay cycle. Two dials: *bottom dial* controls frequency of defrost according to the time of day; *top dial* controls duration of defrost cycle by the three adjustable settings.

Frequency of defrosting can be set for every 3, 6, 12 or 24 hours.

The unit is powered by a 4-watt, heavy-duty, industrial-type motor. For complete details on the 600 Series write for BULLETIN 5945.

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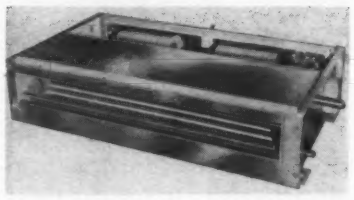
TIME IS MONEY...CONTROL IT WITH PARAGON

Compact Room-by-Room Air Conditioners Added



● Expansion of its air conditioning product line-up to include two new lines of compact room-by-room units has been announced by Drayer-Hanson Div., Hi-Press Air Conditioning of America, Inc., Dept. AH&RN, P.O. Box 2215, Terminal Annex, Los Angeles 54, Calif.

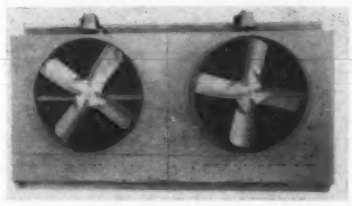
They are for (1) peripheral cooling and heating using floor-mounted units and (2) hideaway applications over closets or furred-down areas. The new models are designated "Spotaire CRC" (ceiling room conditioners) and "Spotaire WRC" (wall room conditioners). Initial capacities are 200, 300, 400, and 600 cfm models; 800 and 1,200 cfm units are soon to be added.

"The small-space low cfm equipment," the company said, "gives a wider latitude of usage conditions: the blower motor assembly (through use of wing bolts) is easily removable on the job—the whole assembly merely slides out. CRC plenum units are readily interchangeable on the job—for either back return or bottom return, an exclusive feature. Available too, is an auxiliary drain pan to facilitate mounting of controls on unit without insulation. It can be easily field-mounted.

"Exclusive-design pivoted channels provide simple removal of filter without necessity to remove front panels. Rather than use of reactors, Drayer's new CRC's and WRC's employ 3-speed motors."

Drayer is readying new deluxe cabinet types, in both console and suspended models.

Cooling Tower Has Double Fan Discharge



● A new size economy model cooling tower with horizontal double-fan discharge has been introduced by Halstead & Mitchell Co., Dept. AH&RN, Bessemer Bldg., Pittsburgh 22, Pa.

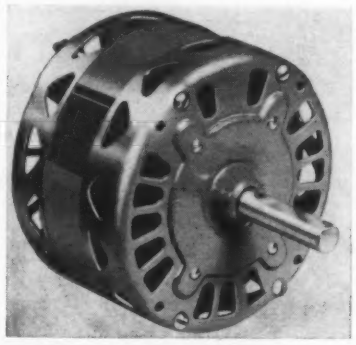
The EC-120 cooling tower has a nominal rating of 120 tons, based on a capacity of 360 gals. of water per minute, at 95°F entering water temperature, 85° leaving water temperature, and 78° wet-bulb temperature, it was pointed out.

"Double fans draw air from the open back of the tower through the wetted deck surface and give greater efficiency through more even air distribution," the company said. "Low-speed, deep-pitch propeller fans provide exceptionally quiet operation.

"As in all Halstead & Mitchell towers, the EC-120 features the company's exclusive 20-year guarantee on the wetted deck surface against failure due to fungus attack or rotting. Normally provided with weatherized cabinets made of electrically-welded 14-gauge steel, the EC-120 cooling tower may be ordered with 10-gauge steel housing at slight additional cost when desired for applications requiring extra heavy duty construction.

"Also available will be an ECK take-apart design, the model ECK-120, for difficult installations.

More details on the products described on these pages may be obtained by writing the manufacturer at the address given in each story.

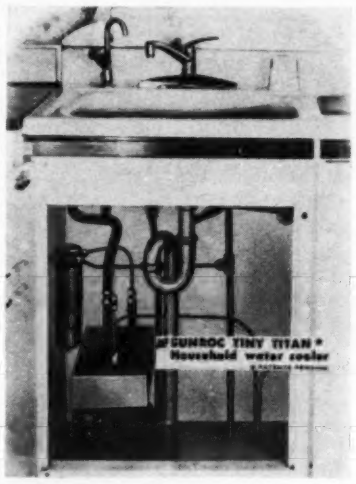


Wide Range of Uses Claimed for Motor

● A new motor designated Type AR is being manufactured by the Redmond Co., Inc., Dept. AH&RN, Owosso, Mich., for a wide range of applications in the heating, refrigeration, and air conditioning industries.

Typical applications include room air conditioners, window fans, and direct drive blowers for central heating systems.

Only 4⅞ in. in diameter, the new Type AR motor can be used for heavier duty applications where a more powerful motor is needed and yet space limitations are critical, according to the company. A 6-pole motor, the Type AR is available from 1/20 through ¼ hp.



Household Water Cooler Fits Small Area

● A new household water cooler —the Sunroc "Tiny Titan"—is sized to fit in any small area under the kitchen sink, counter, or similar location where it can be hooked up to existing water and drain lines, it was announced by Sunroc Div. TT-H, Dept. AH&RN, Glen Riddle, Pa.

The Tiny Titan is furnished with a chrome-plated glass filler that is installed on top of sink or any convenient, point-of-use location selected for dispensing the refrigerated drinking water.

The unit has a water-cooled condenser."

LOOK TO Air Control...

A COMPLETE LINE PROGRESSIVELY ENGINEERED!

When faced with a capacity problem in a return air grille, you'll find the answer in Air Control's No. 333. Designed for maximum free area at minimum cost, No. 333 Grilles are available in 56 sizes up to 30" x 24" with a BIG 493 sq. in. of free area — enough for any centralized return in a residential system or to cut the number of grilles required on commercial jobs. Decorator styling blends perfectly into interiors. Full depth frets set at 22° angle conceal openings. The No. 333 is easy to install in walls, ceilings or doors. Beige prime coat or metalescent.

The No. 333 Series is an example of the progressive engineering devoted to each product in the line. Write today for your copy of Catalog 60-AC. It covers the complete Air Control line in detail.

LOOK TO Air Control for QUALITY

AIR CONTROL

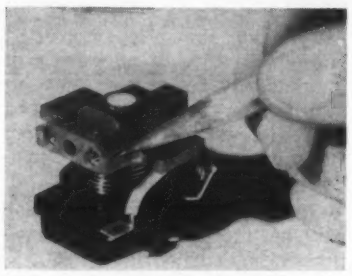
AIR CONTROL PRODUCTS, INC. 361 CENTER STREET, COOPERSVILLE, MICH.

West Coast Warehouse: Leigh Industries (California), Inc., 649 S. Anderson Street, Los Angeles, California. MADE IN CANADA BY: Leigh Metal Products Ltd., 72 York Street, London, Ontario. Prairie Provinces Affiliate: Leigh Products Western Ltd., 313 Archibald Street, St. Boniface, Manitoba.

MIGHTY MITE PROTECTS MOTORS Against OVERLOADS OVER VOLTAGE UNDER VOLTAGE

MIGHTY MITE MOTOR PROTECTORS

MECHANICAL INDUSTRIES PRODUCTION CO.
223 Ash Street Akron, Ohio
SAA 3335/948



Current Relay Claims Superior Load Life

● A new, two-pin, plug in current relay for use with glass terminal clusters on hermetic compressor shells has been introduced by General Electric Co.'s Appliance Control Dept., Dept. AH&RN, Morrison, Ill.

The relay is designated model 3ARR12. It is claimed to have superior load life and improved internal operating characteristics.

The relay's terminal cover has built-in arc barriers for longer life, according to department engineers. The cover is made of a new high-temperature, heat-resistant, phenolic plastic.

The plug-in head of the relay is nylon reinforced with fiberglass for increased tensile strength. It has been designed for added flexibility and can be used in conjunction with a wide variety of glass terminal cluster arrangements. The relay can also be supplied with a three-pin head for special applications.

Bottle-Type Water Cooler Added to Oasis Line

● The addition of the bottle-type model 1B to its line of "Oasis" water coolers has been announced by The Ebco Mfg. Co., Dept. AHRN, 265 North Hamilton Rd., Columbus 13, Ohio.

The company said the model would be the lowest priced in the full line. Features of the model are a vertical wrap-around construction cabinet finished in two tone high bake enamel. The beige front panel insert contrasts with "Desert Dawn" finish cabinet. Drip receptor is color matched to cabinet. The unit is also available in white.

The unit is 12 in. square and stands 36 in. high (not including bottle). The model 1B was designed primarily for installation in areas of limited space and where limited per hour cooling capacities of water are required, the company said.

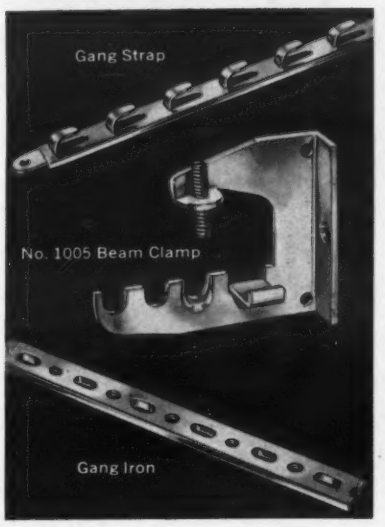
Insulation Offers Stability Below Zero

● A new urethane insulating foam, claimed to provide dimentional stability at sub-zero temperatures in a low-density formulation, has been developed by the Plastics Div., Nopco Chemical Co., Dept. AH&RN, North Arlington, N. J.

Designated "Nopco Lockfoam H-602," the new formulation "is expected to open the way for expanded use in insulating such items as refrigerators, freezers, frozen food lockers, refrigerated warehouses, highway trailers, and refrigerated railroad cars," according to the company.

"The new foam provides excellent structual strength and dimensional stability, and exhibits a K-factor of 0.13. The foam affords these advantages in an over-all density of only two pounds per cubic foot."

Gang Strap, Beam Clamp Tubing Supports Offered



● Gang strap and beam clamp tubing supports for the air conditioning and refrigeration industry are being offered by Minerallac Electric Co., Dept. AH&RN, 25 N. Peoria St., Chicago 7, Ill.

With new and exclusive features, these straps and clamps have saved many hours of installation time, the company said.

The gang straps are made of 22 gauge cold rolled zinc plated steel and support 6 or more ¼-in. o.d. tubes, it was stated. They are available in 6-in. and 30-in. lengths. The beam clamp tubing supports various sizes of o.d. tubes in various positions on the beam. They are made of cold rolled zinc plated steel.

Also offered are gang irons to support single or multiple lines of tubing or conduits. "Parkerized" for added protection, they are available in 5-ft and 6-ft lengths.

Roof Top Units Clean, Heat, Cool Air

● Air cleaning, combined with heating and cooling, is now available in a new series of "Atmos-Pak" roof-mounted units, according to Air Conditioning, Inc., Dept. AH&RN, 88 N. Highland Ave., Ossining, N. Y.

"Different types of air cleaning methods can be incorporated in a standard Atmos-Pak cabinet as part of a one-piece unit, factory assembled and tested, delivered in one piece, ready for installation," it was pointed out. "A recently-installed unit used electrical precipitation for air cleaning, in others throwaway and automatic replacement filters have been used."

Chemical Kills Algae, Removes Tastes, Odors

● "S-K Algam," a patented compound, "to kill algae in water and mildew and fungi on plant life or on damp surfaces; to remove odors and tastes from swimming pools, reservoirs, air conditioning cooling tower spray ponds," is now available from Stiles-Karlsonite Corp., Dept. AH&RN, 1550 Grand Ave., Waukegan, Ill.

"The new S-K Algam joins the S-K chemicals line which presently includes S-K Algaecide," it was noted. "S-K Algam supplements S-K Algaecide for more effective treatment of algae problems.

"Available in 5-lb containers, 1 lb of S-K Algam treats 40,000 gals of water for 15 to 30 days when used with S-K Algaecide."

Delco announces an outstanding new opportunity...

THE GM-DELCO KEY DEALER PLAN

With a complete new line of central heating and air conditioning systems, GM-Delco offers you the GM-Delco Key Dealer Plan—designed to help you get more sales in this huge market . . . and get more profits! Here are the principles of this new plan:

- **General Motors-Delco name**—assures top flight engineering and a universally known reputation for Reliability.
- **Direct Factory-Dealer Distribution**—with planned sales, advertising, training, and promotional aids.
- **Limited number of dealers**—in each market, and only they can buy Delco equipment.
- **Protected Pricing**—stable Pricing that permits dealer profits.
- **Dealer Listings in national ads**—insure direct participation in dynamic advertising, at no cost to you.
- **Complete Sales Building Plan**—of local advertising, prospecting, and selling to build sales.
- **Over 200 models—plus accessories**—meet all needs.
- **General Motors Group Insurance**—available to eligible dealers and their personnel.

GM Delco 365 CONDITIONAIR

There may still be a GM-Delco Franchise open in your area. For full information on the outstanding business opportunities in the GM-Delco Key Dealer Plan, fill out this coupon TODAY and mail to:

Delco Appliance Division, General Motors Corporation
Department R4, Rochester 1, New York

Please give me complete information on your GM-Delco Key Dealer Plan

Name_____

Title_____

Business Name_____

Street_____

City & Zone_____ State_____

A COMPLETE LINE OF FURNACES, BOILERS, AIR CONDITIONING, HEAT PUMPS AND WATER HEATERS TO MEET ALL YOUR REQUIREMENTS.

Recording Labor Costs

Productive and Non-Productive Labor

MIAMI BEACH, Fla. — How to record labor costs so that this information will help you operate your business successfully was explained by D. S. Shepherd, Jr., of the firm of Fails & Shepherd, consultants, who warned that labor costs can be the highest—some times the most unnecessarily high—cost in a contractor operation, in a presentation at the annual convention of the Refrigeration & Air Conditioning Contractors Association.

"The reason for this is not labor's fault. Usually it is with management," he said. "It is with improper supervision or improper training of labor that the fault lies."

Shepherd urged that labor costs, to be a useful tool, should be classified by types and kept separate all through the accounting procedure to the profit and loss statement. The information they provide is lost if they are all dumped into a single labor account.

An abbreviated version of Shepherd's talk follows:

We usually find labor has a tendency to be a fixed cost. It should not be, but most of the time it has a tendency to be a fixed cost. People are simply not able to turn loose their labor when they do not need it. They staff for peak seasons and maintain a relatively stable work force. Therefore labor becomes a fixed cost.

Suppose we divide labor that is productive on the one hand and labor that is non-productive on the other hand. The minute productive volume begins to drop off we find that although productive labor is a variable cost and will vary directly with sales our non-productive labor begins to vary inversely with sales.

Productive and Non-Productive Labor

As sales volumes drop off we find that our non-productive labor begins to increase as a percentage of sales. Therefore the total of the productive and non-productive labor counteract one another and tend to be fixed. It is both a direct and an indirect cost. By productive labor, we mean simply labor for which we can charge a customer.

If we send a serviceman out on a job and we charge the customer for that service work and send him a bill for it, we call that productive labor. It is sometimes called direct labor.

If this serviceman goes out to service a piece of equipment in warranty, he does the same type of work but it is not called productive labor.

There is a distinctive difference between the two because productive labor is a key item in measuring some other cost relationships. So we have to keep it as absolutely clean as we possibly can.

Productive labor, if it is kept clean, will vary directly with sales. We can determine the efficiency of our productive labor by its relationship to sales.

If productive labor is a certain percentage, say 15%, of sales, and the next month it runs up to 18% of sales, we can immediately see we are not installing or not producing the same amount of volume with the same amount of relative productive work.

So the efficiency of our labor can be measured, if we have properly classified labor.

Now, production labor should run approximately 10 to 12% of sales, properly classified. Non-productive labor, contractors will find, runs approximately 2 to 8% of sales. The total of productive and non-productive labor will run 18 to 20% of sales.

So you can see when we have reduced productive labor and yet maintain a relatively stable or fixed labor force, that non-productive labor begins immediately to increase. That is your first indication of whether or not you have too many men for the amount of sales volume you are doing.

Now, realize this. Non-productive labor expense will have a tendency to increase and decrease on a month-to-month basis. But any general increasing trend in non-productive labor over several months is an immediate indication that you may have to retreat.

Total Labor Force Can Amount to 21% of Sales

You can maintain a labor force of both productive and non-productive combined up to about 18 or 21% of sales and still expect to make a good net profit.

One of the most important reasons for classification of labor is for cost control, for job pricing. But by classifying labor we are also able to measure the relative efficiency of labor. Labor as a percentage of sales measures the efficiency of an operation.

But productive labor as a percentage of total labor measures the efficiency of our labor force. This little piece of information you, as a manager, should have every month. Here is how it works. Productive labor is divided by the total labor.

Total labor consists of both productive and non-productive labor added together. It will give a labor efficiency factor that will run 80 to 90%. Your practice of insisting that your labor charge to the job only hours worked on the job, or insisting that every hour he works be charged to a job will determine whether or not 80 to 90% is an efficient, productive labor factor.

Nevertheless, we can easily see that if in one operating period the productive labor efficiency factor is 80% and in the next it goes down to 70%, we are losing the efficiency of our labor.

One place wherein many firms lose a considerable amount of money is failure to properly classify labor. Take a job where sales are $100,000, material is $60,000, labor is $15,000, overhead $15,000, and profit $10,000.

We will use this profit and loss statement to determine an overhead application rate that we will use to apply overhead to jobs. In estimating a job, we have certain known costs and

"Here's why I standardized on H&M cooling towers

...they're the only towers with a 20-Year Guarantee on the wetted deck surface!

"In my town, most air conditioning and refrigeration buyers prefer cooling towers for their installations. But local water conditions are pretty hard on the fill. Fungus and algae grow fast and furious—so fast that the accumulation actually blocks air flow and cuts tower capacity!

"After trying several makes, I standardized on H&M Cooling Towers. *The wood fill is specially treated with creosote applied under pressure,* and water plants and animals can't live on that! That's why the Halstead & Mitchell towers carry a 20-Year Guarantee on the wetted deck against failure due to fungus attack or rotting."

If you want towers that will last, and need a minimum of care, you should find out about H&M towers. Call your local parts wholesaler or write for Bulletin EC-500 (Propeller Fan Towers, 3 to 150 tons) or Bulletin ECKB-601 (Centrifugal Fan Towers, 5 to 30 tons). Halstead & Mitchell Co., Dept. H-53 Bessemer Building, Pittsburgh 22, Pa.

HM

Halstead & Mitchell

Cooling Towers • Air-Cooled Condensers • Air Handlers and Coils • Water-Cooled Condensers

Export Representatives: Sabal-Kielmann, Inc., 15 William St., New York 5, N. Y.

PROBLEMS OF business management have taken a prominent place in the minds of air conditioning, heating, and refrigeration contractors as their net earnings have shown a tendency to decrease. At the annual convention of Refrigeration & Air Conditioning Contractors Association (RACCA national), the matter of what the contractor might do in terms of management was discussed by Dr. E. A. Falls, executive secretary and director of research, Heating & Air Conditioning Research & Development Association, and widely known consultant on contractor management problems; and D. S. Shepherd, Jr., his associate.

Condensed reports of these discussions are being published in the NEWS. In this last of the series Shepherd discusses the subject of keeping records and labor costs.

certain unknown costs that we have to consider.

If these known costs occur all the way through the record keeping system and maintain their identity until they appear on a profit and loss statement, then all the items that appeared as overhead on the profit and loss statement were unknown costs at the time of estimating.

So we have to establish a relationship between these unknown costs on a profit and loss statement which we call overhead.

We will consider productive labor as being the most significant method of finding a measure for overhead costs. Let us assume in this profit and loss statement we have proper classification of labor. In an overhead figure amounting to $15,000, let us assume there is $5,000 of non-productive labor.

We have productive labor of $15,000. In our overhead expenses, we have non-productive labor of $5,000. Let us determine from the profit and loss statement what ratio we are going to use to apply overhead on the job-to-job basis. We find the overhead is $1 for every dollar of labor.

Mistake Is Dumping All Labor Into Single Account

Now, here is the mistake that most people make: Instead of classifying labor properly in the records of the company, they dump it all into one account called labor. Then, what happens?

Here is what we would have: You would have material costs of $60,000. Since we did not classify the labor properly and since we dumped the $5,000 of non-productive labor here, it shows we have $20,000 of labor.

So we have $10,000 of overhead shown on the statement and $10,000 of profit. We are trying to determine an overhead application rate. So from this statement which has improperly classified labor in it, we fool ourselves into thinking that overhead is 50% of labor.

Now you realize, when we are doing this, we are making tools we are going to use, perhaps for a full year. It is going to give us a rate of just about half of what it ought to be.

Where Did the Other Labor Go?

Where did the other labor go? It was not taken into consideration as far as overhead was concerned. We did not charge it to a customer. It was not put on a job cost sheet as charge for labor. The charge to the customers was only $15,000 for labor.

We just made the mistake of dumping it into one account. That would not make any difference as far as determining profit and loss since we still come up with $10,000 profit. That is not our aim or desire at this point.

We are trying to determine a relationship between our unknown costs and some known costs so we can use it on a job basis. This non-productive labor which was hidden when it was dumped into the labor account we call lost labor.

We can recoup that lost labor without classifying labor propperly by simply adding a lost labor factor onto it, however I do not suggest we do that. Improperly classified labor can be a tremendous cost to your firm.

You can be misstating the proper costs of your jobs as much as twice as much as the non-productive labor amounts to, since it was not considered as a direct charge, and it was not considered in the overhead when we arrived at an overhead application rate.

Non-productive time is one of the most expensive luxuries we can have.

Let us look, for example, at the cost of an innocent 10-minute coffee break. Let us take a $3-an-hour man. There are six 10-minute periods an hour. Divide it by six, and you will find that it costs 50 cents for one man to take one coffee break for 10 minutes. There are 52 weeks in the year, five working days a week, 260 days, 50 cents for the coffee break, $130 a year for one man. Multiply that by 20 men, $2,600 for an innocent coffee break. Multiply it by 40 men, $5,200 for an innocent coffee break.

Just some ideas of the costs of known non-productive time. It is worth keeping tabs on to determine at least how much this kind of thing is costing you in a year's time.

Several Classes of Labor

There are several classes into which labor should fall. The most important we call **productive labor.** This classification is important because this is the classification we will use as a measuring stick to measure some other costs which may be even greater than this. Therefore, it has to be kept clean.

Another class of labor is **warranty service.** We find quite a few people do not even consider warranty service in their operation. The cost of this work is usually more than we sometimes like to believe it is. Until you use warranty service reserves and charge material and labor against these reserves, you will not know how much it costs you. The cost is tremendous.

Many contractors have set aside a certain amount that they call warranty service reserves. When they perform services or put material into the service of the equipment in warranty, they will reduce the amount of reserve as a debit. They simply reduce the amount of the income they set aside for warranty service.

But rather than do that, we propose to open up two more

(Continued on next page)

Upper right area—clean with CalClean

new CalClean lets you spray dirt and grease away!

clean finned cooling coils the EASY Calgon way

Finned coils that are coated with grease and oil-bound dirt cannot function at top efficiency. Airflow is impeded and heat transfer is lowered. Now, CalClean makes the job of cleaning such equipment simple and easy. CalClean is a heavy-duty liquid detergent that is high-powered, yet so safe you can use it to wash your hands. It destroys grease and tar residues by chemical action—*not* by just flushing it away. Here is how easy it is to use CalClean:

1. Spray solution on surfaces to be cleaned—let stand for five minutes.
2. Flush with clear water.

That's all there is to it. The heaviest grease and grime can be removed with a solution made up with five parts water and one part CalClean. CalClean is not only the most effective cleaner for finned coils—it is the most economical because you dilute it with FIVE parts water.

CalClean can be used on finned coils of all kinds—evaporator coils, window units (cover fan motor with plastic to keep windings dry), air cooled condenser coils, heating coils, permanent air filters, or on any other greasy equipment that is not affected by plain water. It is fine for cleaning equipment in food plants and stores.

CalClean is one of the quality Calgon products—which include Calgon® Scale Remover, Micromet® Plates and the most complete line of other water treatment products. Ask your refrigeration wholesaler about CalClean or any of the Calgon line.

The No. 300 CalClean Sprayer is a low cost sprayer designed specifically for use with CalClean. Large air pump in 3½-gallon tank saves time. It's easy to reach hard to get at places with the 20-inch extension tube and 10 feet of hose.

CALGON COMPANY
HAGAN CENTER, PITTSBURGH 30, PA.

DIVISION OF **HAGAN** CHEMICALS & CONTROLS, INC.

Labor Records--

(Continued from preceding page)

accounts. Rather than reduce the reserve account by the amount of labor that goes into it, we would like to keep it separate for a year or so and see what charges are made against it. So we have a warranty service labor account and a warranty service materials account.

Now we make no overhead application on labor in this warranty service work because we cannot recoup overhead on warranty service.

But if we have these two accounts, warranty labor and warranty service materials, carried separately in the books, we can make a little profit and loss statement in warranty service.

The amount that goes into the reserve is often treated as a liability on the books, but it is actually income. I think you will find the Internal Revenue feels that way about it also.

Often neglected in the classification of labor is a **manufacturing labor** account. Labor that goes into making parts that go back into stock more often than not is expensed, but the proper handling of it for management information, of course, would be to capitalize that labor and charge it back to the inventory.

Another classification of labor is regular **service labor.** We need to know profit and loss on service work. We need to know if our service department is efficient.

We have one other classification, the **residue,** non-applied—**non-productive labor.** This is the most unnecessarily costly labor.

Since labor costs are one of our greatest costs, we effect a considerable amount of improvement in the handling of it through labor classification. There are other things that can be done to help us to cut these costs down, such as better supervision, good training, good job planning. Oftentimes you will find when you send three men out to the job they can do the work in about the same amount of time as two could have done it. Sometimes one can do it as quickly as two.

Good job planning requires the use of a minimum of labor. It requires planning to carry necessary materials out to the job to prevent men from having to come back to the shop to get them.

Often a great deal of time is lost in dispatching men after they report to work. We find by staggering their reporting time approximately 30 minutes apart, in groups of 10 to 15, we are able to dispatch the men with a minimum of lost time.

All these things will improve the efficiency of our labor, one of the highest costs we have.

Sales, Advertising Plans for Mark IV Auto Air Conditioners Announced

NEW YORK CITY — Mark IV's 1961 sales and advertising plans were announced at the East Coast regional sales meeting held here.

Bill Scully, of Scully Bros., Mark IV's eastern representative, predicted a 100% increase in Mark IV sales due to "a widely expanded line, a greatly increased advertising campaign, and the natural increase in yearly sales for the very low saturated auto air conditioner market."

Don Mitchell, president of Mark IV, talked about the expanded line and product improvements that were made for 1961. He also discussed the national advertising campaign which is presently running in *The Wall Street Journal.* This campaign is designed to attract fleet owners.

Stanley Fried, of Fried Advertising, gave the details on Mark IV's consumer advertising program. He stated that Mark IV will run a heavy dealer listing newspaper schedule in the Sunday *Times Magazine* section.

Besides the *Times Magazine* schedule, Mark IV will have a cooperative advertising program for its distributors and dealers. Newspaper mats, radio commercials, and television spots are available.

Shreveport, La. Issues 90 Permits In Apr. For Cooling, Heating, Refrigeration

SHREVEPORT, La.—During April, the city's Air Conditioning Dept. issued 90 permits for air conditioning, heating, and refrigeration installations totaling $464,538, it was reported recently.

This compares with 125 permits issued during March for a total equipment and installation cost of $209,609, according to Clyde Juneau, air conditioning inspector. The April permits were broken down as follows:

Residential: year-round air conditioning and heating—26; air conditioning—4; heating—36; replacements—2.

Commercial: year-round air conditioning and heating—9; replacements—2.

Alteration and/or additions—9. Refrigeration—2.

The largest commercial permit of the month—amounting to $242,325 — was issued to George Linskie of Dallas to install air conditioning and heating for Sears, Roebuck & Co., 3601 Southern Ave. The largest residential permit was issued to Arkansas-Louisiana Gas Co. for a $4,493 air conditioning and heating installation.

ARW Region 10 Shifts Fall Meeting To Cooperstown, N. Y.

COOPERSTOWN, N. Y.—Frank Meier, chairman of Region 10, Air Conditioning & Refrigeration Wholesalers, has announced the selection of the Otessa hotel here as the headquarters for the region's fall meeting Sept. 22-24.

The meeting had been scheduled for Rocky Point Inn, in Inlet, N. Y., but due to a conflict in dates with another group it was impossible to hold that location.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

When you tap a line . . .
Stop fumbling
with loose parts

Use a NEW Imperial
Hermetic Piercing Valve

No loose parts. No bolts or screws required to adapt this unique C-clamp type piercing valve to a line. Just slip it over the tube, tighten nut, turn setscrew and pierce the tube. It's quick and economical. Tap the line at any point for charging, testing or purging hermetically sealed units. Handles: 3/16", 1/4", 5/16" and 3/8" O.D. Ask for Imperial No. 342-C Hermetic Piercing Valve.

SLIPS OVER TUBING

IMPERIAL EASTMAN
Imperial-Eastman Corporation General Offices: 6300 West Howard Street, Chicago 48, Illinois

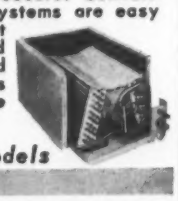
Comfort-Aire
AIR CONDITIONING

Self Contained
Air Conditioners

Four full capacity models of 2, 3, 4 and 5 h.p. for residential and commercial applications. Smart in appearance and design proven, they allow complete flexibility of installation. Large coil surfaces, bonderized cabinets, Tecumseh compressor, capillary system and other quality features provide a Comfort-Aire owner many years of quiet, dependable operation.

Remote
Air Conditioners

Available in the same size range as self-contained models, the split systems offer a large choice of evaporator-blower units and coil sections. The compact, efficient matched compressor units feature oversized condensers, low velocity horizontal air flow and Tecumseh compressors. Comfort-Aire matched systems are easy to install, quiet in operation and weather proofed to provide years of trouble free performance.

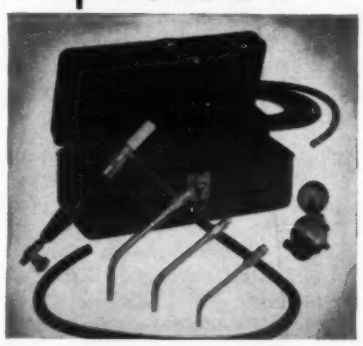


Also Available in Heat Pump Models

Dehumidifiers - Portable Room Air Conditioners - Through-the-Wall Air Conditioners - Furnaces - Air Cooled Remote and Self Contained Air Conditioners - Air Cooled Remote and Self Contained Heat Pumps

HEAT CONTROLLER, INC.
1900 Wellworth Ave. Jackson, Mich.

BUILD
YOUR
BUSINESS
ON
$43.00!



Install • Service •
Find and Fix Leaks
with the
PREST-O-LITE
Refrigeration
and
Air Conditioning
Outfit

This single compact kit costs only $43, yet contains every essential piece of equipment for your work. You get three interchangeable open-flame stems to provide the right air-acetylene flame for soldering, brazing, or heating. Fit the sensitive leak detector stem to the same torch handle, and you can pinpoint the tiniest halide gas leaks—as little as 100 parts in 1,000,000 parts of air. Compare that with soapy water!

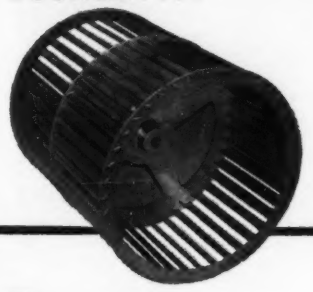
In one sturdy carrying case, the kit also includes an adjustable gas pressure regulator, torch handle, and hose—everything for the installation, repair, and everyday maintenance of all types of refrigeration and air conditioning systems. See your local *Prest-O-Lite* dealer. Or write Linde Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N. Y.

LINDE COMPANY UNION CARBIDE

"Linde," "Prest-O-Lite," and "Union Carbide" are registered trade marks of Union Carbide Corporation.

WHY?
Why Does
Amana
REFRIGERATION, INC.
use Revcor
"BLASTAIRE"
BLOWER WHEELS?

because...



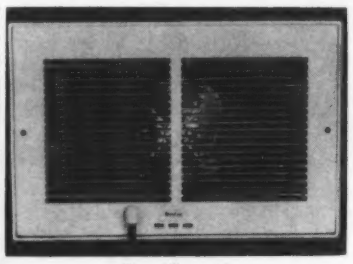
Revcor Double Inlet

Blastaire Blower Wheels use less space and meet the high performance and quality standards demanded by Amana!

Revcor *Single* and *Double* INLET BLAST-AIRE BLOWER WHEELS ARE USED BY OVER 60% OF THE ROOM AIR CONDITIONER MANUFACTURERS!

WRITE FOR FREE BROCHURE
or send specifications to:

Revcor INC.
ENGINEERS-MANUFACTURERS
251 Edwards Street
Carpentersville, Ill.



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Electric Booster Fan With Thermostat Fits In Register

COSHOCTON, Ohio—Sumner M. Levine, president of American Art Works here, announced that the metal specialties manufacturing company, a division of Rapid-American Corp., was recently awarded a $500,000 contract from Boostair Corp. for the manufacture of an electrically-operated booster air fan.

Boostair Corp. is a subsidiary of Universal Fuel & Chemical Corp., Pittsburgh.

"The small thermostatic-control unit can be inserted in the average room air vent with just a screwdriver and ensures uniform and efficient warm air distribution," it is claimed. "The Boostair unit is equally effective in distributing cooled air in those homes with air conditioning systems."

C. J. Stewart Elected President of Rybolt

ASHLAND, Ohio—C. J. Stewart, formerly vice president and general manager of The Rybolt Heater Co., was elected president at the annual meeting held here recently.

C. J. Stewart

T. M. Rybolt, former president, is now chairman of the board of directors.

The new president unveiled to the shareholders Rybolt's newly-developed product lines now available to the trade. Composed of new cooling units and recently designed electric furnaces, these products will represent 40% of future sales, it was stated.

An expanded sales advertising effort, now in process, will round out the company program for the coming year. The new product development program represents the firm's largest single effort of this type.

What They're Saying, Doing

On the Industry's Firing Line Today

THIS COLUMN SPOTLIGHTS current outstanding activities and thought-provoking attitudes of those who are engineering, selling, installing, and servicing the industry's products. In some instances, for good reason, the source must remain anonymous.

What's for Heating In 1986? — H. F. Holtz Ventures a Few Predictions

"Forced air heating will have dwindled to a replacement market business comparable to what the stoker industry is today.

"The heat pump will never have quite made the grade because of other energy sources more readily available.

"Electric heat will be used primarily in new home construction, since only a limited amount of atomic energy or electrical power transmission will have become available."

These are some of the predictions made for 25 years from now, 1986, for the heating industry. The seer: H. F. Holtz, vice president, Cleaver-Brooks Co., Milwaukee.

Looking at some other heating methods, Holtz predicted that high temperature hot water heat transfer will be commonplace and used in all major commercial and industrial markets. "It will also have established some acceptance for use in the domestic home market."

COMPETITIVE SOLAR HEAT

The Cleaver-Brooks vice president expects solar heating for domestic use to be becoming competitive in 1986, primarily because "capacitors will have been developed for storage of solar energy for use on a cloudy day."

"Steam for use in low pressure heating systems will be faced with a declining market. High temperature water boilers will be commonplace for year-round use for cooling in summer, heating in winter."

Casting his eye over the fuel situation, Holtz sees that "gas will have reached its peak for heating and will have started a gentle downward movement. A crest of 65% to 70% of the total heating market for gas is likely."

Fuel oil, he estimates, will account for less than 10% of total heat-producing fuel. Coal, by 1986, will not be a major heat source. Electric power from peacetime atomic development will be growing at a rapid rate, limited only by the availability of transmission lines.

"The balance of the (fuel) market will include such things as solar systems, heat pumps, possibly new forms of heating." Combined such systems will account for less than 10% of the market, Holtz estimates.

16 Emerson Electric Distributors Attend Heating School

ST. LOUIS—Sixteen distributors from the south and midwest attended a two-day electric heat training school and workshop at Emerson Electric headquarters here.

An expanded version of Emerson's electric heat field training program was presented with sessions devoted to heat loss calculation, equipment choice, function and application, and successful sales techniques, as well as the benefits and sales advantages of electric heat.

"This is one of several workshops scheduled in St. Louis by Emerson Electric this year for distributors interested in becoming a part of the growing electric heat market."

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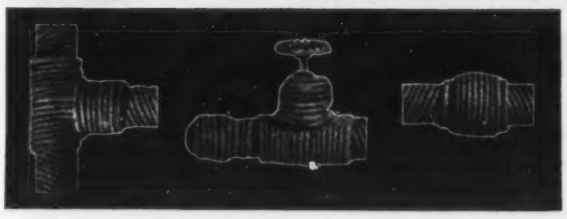

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FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG WAREHOUSES

Packaged Heat Pumps, Electrostatic Filters Improve Quality of 4-Color Printing (2)

By George M. Hanning

First part of this article on the heat pump system at Mossberg & Co., Inc., quality printers of South Bend, Ind., described the "thermal blanket" air distribution system in the modernistic general office area with its free-standing wall.

The office air conditioning system has worked very satisfactorily. However, the system for the critical plate making room has taken considerable adjustment to satisfy the owner, both in respect to conditions maintained and operating cost.

The standard heat pump thermostats were not as sensitive as wanted by the owners but the thermostats were used after modification.

As previously mentioned, the heat pump in the plating room was suspended from the ceiling and discharged air directly into the room. Fresh air was brought in from the roof by duct to the return air plenum at floor level. Return and fresh air was mixed there and passed through the electrostatic filter.

Then it was drawn up into the indoor section over the heating and cooling coils, through a reheat coil, over a pan humidifier with 6 kw immersion heating coil, and finally discharged into the room.

Electric temperature controls are standard and built into the heat pump. Johnson Service Co. pneumatic humidity control was mounted on a girder along side the thermostat.

As Priebe complained that he was not getting the conditions he wanted and operating costs were proving greater than anticipated, a number of changes were instituted.

Changes Made To Improve Performance

First, it was found that passing trains on a nearby railroad track were causing vibrations through the structural girder. This affected operation of the thermostat and humidistat.

To correct this, they were moved to the return air grille. At this location, better control of air was obtained and operation proved more satisfactory.

Secondly, Priebe complained that close control was cycling the compressor too frequently. Instruments were affected by discharge air that bounced off a column.

These controls were shielded and the control points were adjusted to lengthen compressor on and off cycles. This gave a little less exact control, according to Priebe, but with less frequent cycling, operation costs were reduced.

Tihrdly, the 6 kw heater in the pan humidifier was found to be too large. Water temperature rose too quickly in too short a time, causing moisture to be added by flywheel effect after the humidistat was satisfied. This was corrected by replacing the 6 kw coil with a 3 kw coil.

Fourthly, the condensate pan in the indoor section was mounted so close to the bottom of the blower wheel that the wheel would pick up water and sling it back into the air stream —very undesirable in all areas and particularly harmful in the plating room.

This was corrected by tilting the entire unit for faster drainage and installing a trap in the drain piping.

Fifthly, although the outdoor condensing units were considered weatherproof, more protection was required to prevent snow and ice from building up under the coils in winter and dust from attacking fan bearings in summer. Buffers in front of the intake grilles are expected to correct this fault.

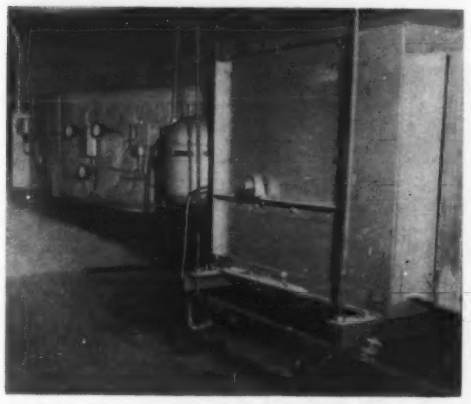
Lowers Operating Costs, Too

Similar corrections were applied to the other heat pumps with equally salutary results. After each correction, Priebe declared, performance was improved and cost lowered.

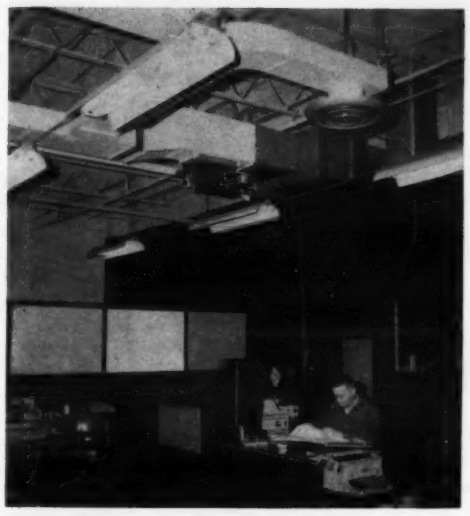
Mechanical contractor on the installation was E. J. White, Inc. Sheet metal subcontractor was J. C. Lauber Co.

Barber-Colman products were supplied by Hanel Bros. and the Carrier heat pumps by Associates Sales & Service Co. Architect was Smith & Mass and office design architect was Montana & Schultz.

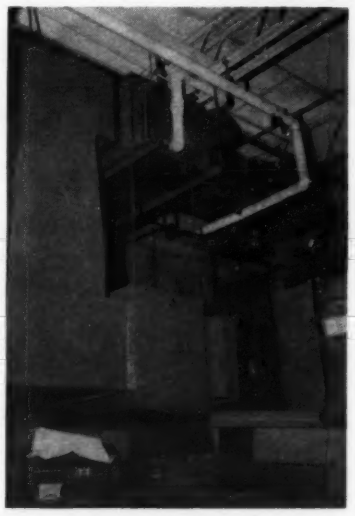
All are South Bend firms.



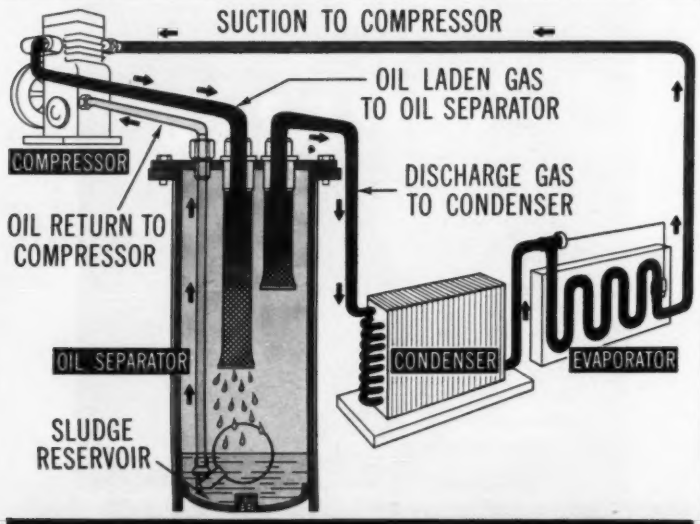
INDOOR SECTION of heat pump over conference room. Ducts from this unit run under office floor to free standing wall and to conference room registers. (See drawing in last week's issue.) Walton humidifier operates in winter to protect valuable teak wood flooring and high quality furniture in office and conference room. In all other areas, humidity is added by Johnson Service Co. electrically heated copper pan humidifiers.



ART ROOM heat pump is attached by short duct runs to ceiling diffusers here and in adjacent dark room. Fresh air supply duct at right connects with unit return air grille to left of desk. Note electrostatic air filter to left of man at desk.



ONE OF FOUR heat pumps in paper storage area. There is no electronic filter on this unit, but provision is made for its installation at a later date, if desired.



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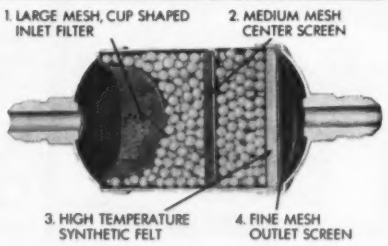
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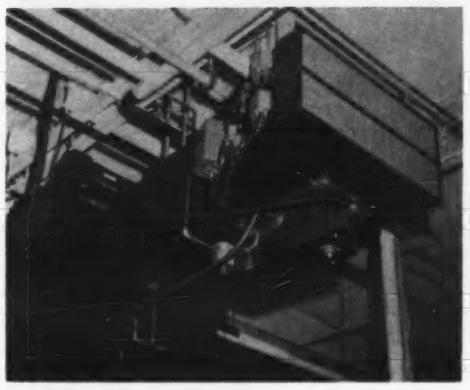


CLOSE-UP of plate room heat pump showing temperature controls, pan humidifier, and new drain connection for condensate.

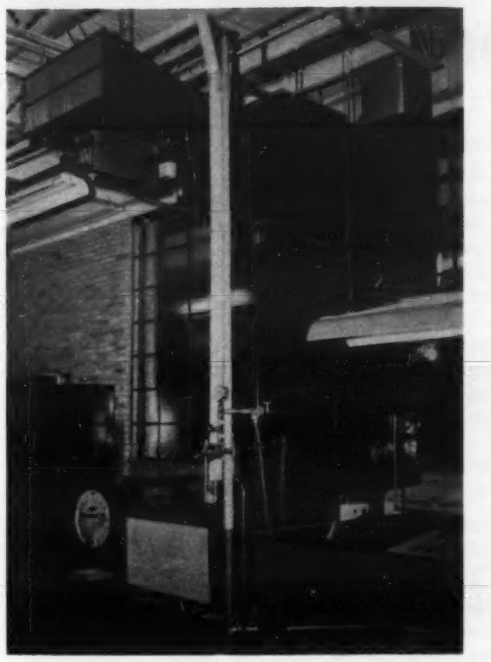
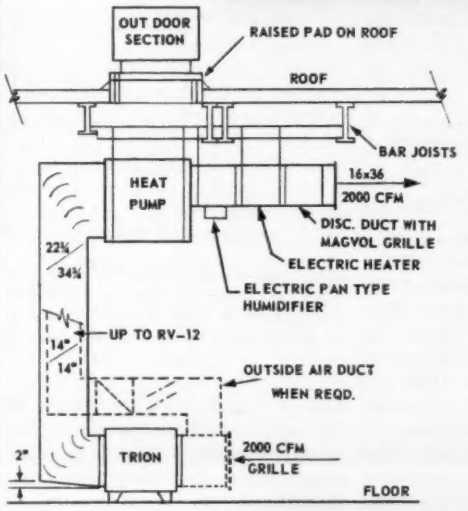


PLATE ROOM heat pump. Note fresh air duct at right, return air grille at floor level, pan humidifier just below discharge grille.



DRAWING of plate room heat pump system showing arrangement of components and fresh air system. Though troublesome at first, due to a variety of factors, the system is now operating satisfactorily.

TWO OF EIGHT condensing units on roof. Note how discharge is diverted to avoid intake of unit at left. Behind Collins is folded plate roof with glass panels all around.

Botanical Garden

Unshaded, Unpartitioned Geodesic-Domed Climatron Gets Varied Temperatures with 2 Systems

ST. LOUIS—Unique requirements of climate control in an unshaded and unpartitioned greenhouse were resolved by designing two separate mechanical systems at the geodesic-domed Climatron in the Missouri Botanical Garden here.

The Climatron, which recently won the 1961 R. S. Reynolds Memorial Award for architectural excellence for its architects, Murphy and Mackey of St. Louis, is a dramatic botanical showcase of tropical vegetation with closely controlled and varied climatic conditions for research purposes.

Inside the aluminum and plastic dome measuring 90 ft high and 175 ft in diameter, there are five paths of temperature and humidity gradients with an infinite combination of air flows to provide varying temperatures and humidities.

A ventilation and evaporative cooling system is oriented from west to east, while a heating system is oriented from south to north.

Air, entering the west end of the Climatron through three separately controlled intake dampers, passes through a mist spray, then sheets of water, and finally a nylon eliminator screen to diminish water carryover.

At this point, air temperature is 80°F and 85% r h. Passing through the dome, the air gains heat and loses moisture. When discharged through five banks of separately controlled exhaust fans at the east end, air temperature will be approximately 90° and 70% r h.

During summer, air is changed every two minutes. During winter, changes vary between once every 10 minutes to once every 30 minutes. In winter, heated water is introduced through the sprays.

The heating system, designed to supplement solar heat and be the principal heat source at night, consists of blowers, modulating steam heating coils, and steam spray humidifiers, it was pointed out.

Air path is from return air openings at the north end of the dome through modulating dampers, functioning with fresh air dampers, through blowers, coils, and humidifiers, and through an air tunnel to the south end.

Air delivered at the south end is controlled by thermostat which modulates temperature of the heating coil.

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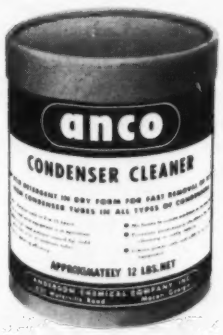

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Studies Determine Suitability, as to Sound, Vibration of 3-Ton Unit for Apartment House

"Determination of the Suitability, with Respect to Vibration and Sound, of an Air Conditioning Unit Proposed for Application In a Projected Large Apartment House." A Detroit Edison Co. Engineering Research Report prepared by J. O. Smith, B. D. Miller, and G. C. Kaercher.

The Detroit Edison Co. Engineering Research Reports on the suitability of a 3-ton air conditioning for application for individual apartments in an apartment house should be interesting to a variety of readers engaged in the air conditioning industry. It offers information that will prove useful to those who design, specify, and install air conditioning equipment and air conditioning installations—and also to those who buy air conditioning for multiple-dwelling buildings. Published in this issue is the first of two reports on this project. The second, which makes some comparisons with the window or through-the-wall type unit, will be published in a subsequent issue.

Statement of Problem

1. Electrically powered 3-ton air conditioner units are being considered for use in several large apartment buildings of reinforced concrete construction presently being designed by a local architect. If these units are selected, it is probable that they will be used in combination with electric space heating in individual apartments for year-round climatic control. The architect is also considering the use of absorption-type air conditioning equipment.

2. The Sales Department advises that, under normal marketing conditions, absorption-type air conditioners are higher in both first and operating costs—as compared with motor driven equipment. However, the suitability of mechanical air conditioning for use in the projected apartment buildings has been questioned. It is the contention of this department that acceptable, vibration free, and silent performance can be realized with compressor-type units—if the latter are installed on properly designed vibration isolation mountings. This project was initiated, therefore, for the following purposes:

(1) to construct and evaluate a properly designed vibration isolation mounting for the proposed units, and

(2) to evaluate the noise characteristics of the units and express an opinion regarding the probable noise level within the living quarters resulting from their operation.

3. The air conditioner units under consideration are designated as Type ACP-32 and are manufactured by the American Radiator & Standard Sanitary Corp.

4. This report contains (1) a description of the vibration isolation mounting designed for the units, (2) the results of tests conducted to evaluate the effectiveness of the mounting in minimizing the transmission of vibration to surroundings representative of those that would exist in the projected apartment buildings, and (3) the conclusions of studies to predict the probable noise levels that would be prevalent within the living quarters and in certain other areas of the buildings due to operation of the equipment.

Conclusions

Transmission of Vibration

5. The isolation mounting tested at the laboratory provides a very effective reduction in the transmission of mechanical vibration from the air conditioner unit to the wall in which it is installed. If these units are installed on similar mountings in the projected apartment building, the transmission of vibration to the walls and floors of the building will be below the threshold level of sensory perception.

Predicted Sound Levels In Building

6. The results of acoustical studies indicate that the maximum noise level in any apartment will be less than the maximum acceptable noise level for sleeping quarters. This fact has been further substantiated by model studies.

Proposed Installation of Air Conditioners In Apartment Building

7. Fig. 1 shows schematically the proposed arrangement of the air conditioning equipment in the apartment buildings. The air conditioner units would be installed in openings in the walls of a 9-ft square shaft that extends vertically from an elevation about 18 ft above grade to the roof of the building. The walls of the shaft will be 6-in. thick reinforced concrete. At each floor level two apartments are arranged symmetrically about the shaft.

The air conditioners serving the two apartments are to be installed at the same elevation in opposite walls of the shaft. The end of the unit that houses the condenser will protrude into the shaft. The opposite end, housing the cooling coils, will extend into a small enclosure of the apartment called the "mechanical room," which is separated from the living quarters. Conditioned air from the unit is ducted from this location to the other areas of the apartment.

8. The shaft will be divided by a vertical partition as shown in Fig. 1. Outside air for condenser cooling will enter the units from one side of the partition and will exhaust to the opposite side and be drawn upward by an induced draft fan at the upper end of the shaft.

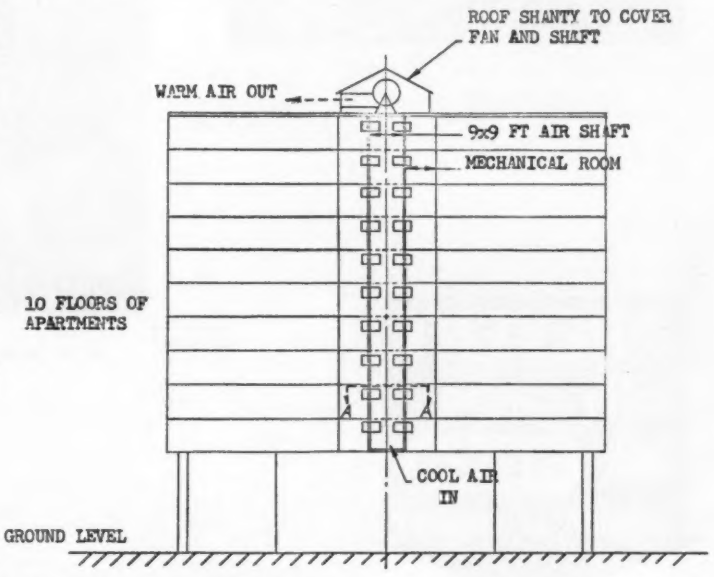
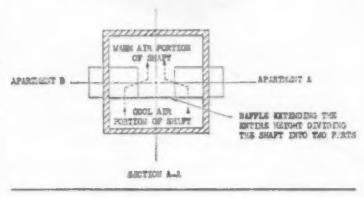


FIG. 1—(above and right) Sketch of projected apartment house shows proposed arrangement of the 20 air conditioners to be installed in one of the two air shafts.



9. The description of the air conditioners is as follows:

(1) Refrigerating capacity.....3 tons (36,000 Btu/hr)
(2) Weight (excluding ducts) .....425 lb
(3) Dimensions
  (a) Length .....49⅝ in.
  (b) Width .....32 in.
  (c) Height .....26 in.
(4) Type of fans:
  (a) Evaporator fan .....Centrifugal
  (b) Condenser fan .....Axial flow
(5) Full load speed of components:
  (a) Compressor..1,760 rpm
  (b) Compressor fan .....1,140 rpm
  (c) Evaporator fan .....1,760 rpm
(6) Power supply 230 v, single phase, 60 cycle

Description of Vibration Isolation Mounting

10. The vibration isolation mounting designed to support the air conditioner unit is shown

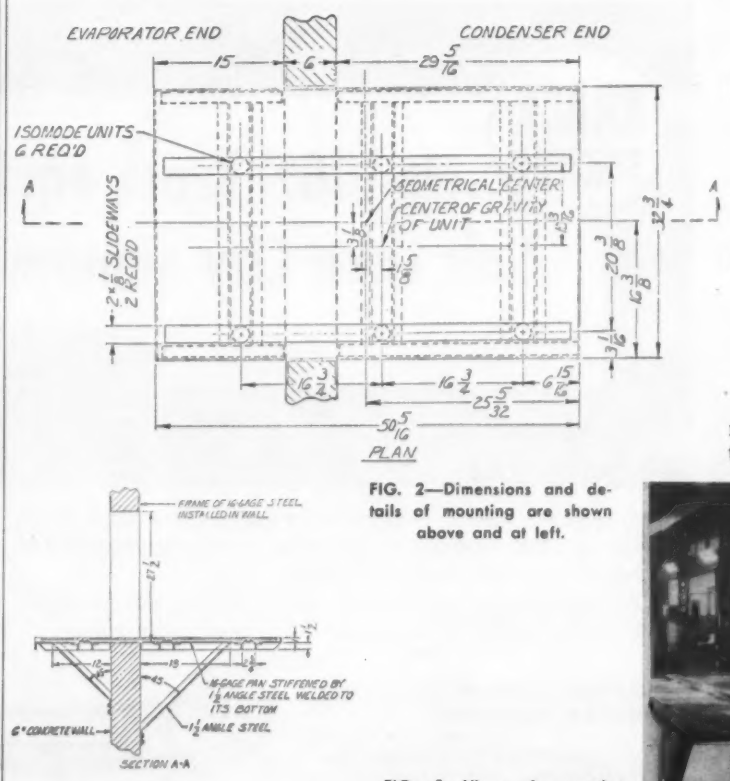


FIG. 2—Dimensions and details of mounting are shown above and at left.

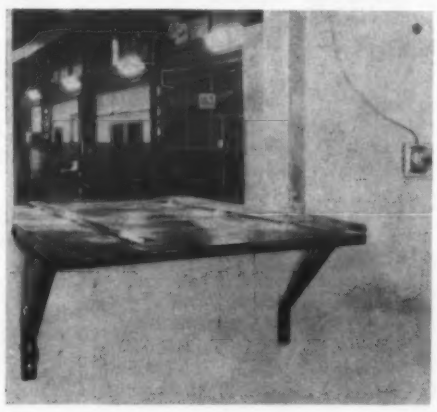


FIG. 3—View of mounting shows arrangement of six Isomode units for vibration isolation.

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By S. A. Andersen

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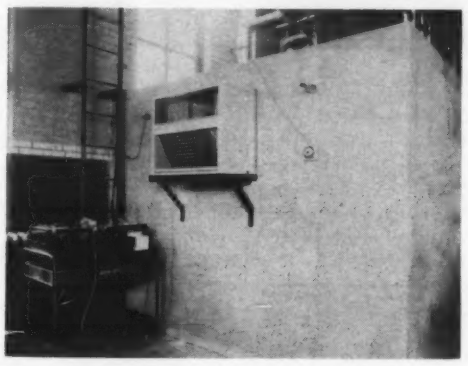

FIG. 4—Front view of concrete test wall shows air conditioner and its mounting.

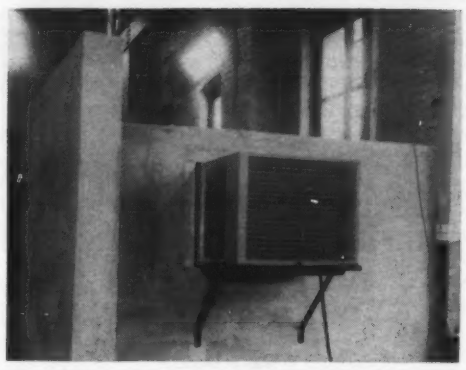

FIG. 5—Rear view of concrete test wall shows portion of air conditioner that extends into building shaft.

in Fig. 2. Dimensions and details of the mounting are shown in Fig. 3. This mounting employs six "Isomode" rubber mountings symmetrically arranged about the center of gracity of the air conditioner. The three Isomodes on each side of the mounting are connected by a ⅛ by 2-in. flat bar. The two flat bars serve as slideways to facilitate installation or removal of the unit from the mounting.

Vibration and Sound Studies

11. The remainder of this report is subdivided into two parts covering the vibration and sound tests to evaluate the probable performance of the air conditioner units if installed as proposed.

Vibration Studies—Procedure

12. For purposes of designing the isolation mounting, certain data were required on the vibrational characteristics of the air conditioner units. Measurements of amplitudes and frequencies of the vibration created in the unit by the operation of the fans and compressor were made while the unit was supported on a wooden platform in the Sound Laboratory of the American Blower Corp. at Dearborn, Mich.

13. The primary consideration in the design of a vibration isolation mounting is to establish a ratio of resilience to mass such that the natural frequencies of the system are much lower than the operating speed (or speeds) of the equipment. If the ratio of natural frequency to operating speed is greater than 0.71, there can be no reduction in transmission of force impulses (transmissibility); instead, there will be magnification of the impulses. When this ratio is lower than 0.71, reduction is achieved. For good isolation, the ratio should be 0.50 or lower. This criterion was used in the design of the isolation mounting for the air conditioner unit.

14. In order to evaluate the effectiveness of the isolation mounting under representative conditions, a 6-in. thick reinforced concrete structure, simulating two walls of the building shaft, was erected in the laboratory. The air conditioner unit was installed in an opening provided in one wall as shown in Figs. 4 and 5. The wall containing the unit was 10 ft wide and 7 ft 9 in. high. The tops of both walls and the edge of one wall were unsupported as shown in the photographs.

This arrangement provided considerably less rigidity than would exist in the actual building shaft, in which all four walls are built in at their edges and braced at approximately 9-ft intervals at the intersecting floor structures.

15. Amplitudes of vibration due to operation of the air conditioner unit were measured at two locations (shown in Fig. 4) by means of sensitive vibration pickups connected to a recording oscillograph.

Vibration Studies—Results and Discussion

16. The results of the initial vibration measurements made at the American Blower Laboratory indicated that the principal disturbance created by operation of the unit was at a frequency of 1,760 cpm which is the operating speed of both the compressor and evaporator fan. Table I gives the amplitudes and corresponding frequencies of vibration on the unit when the compressor and evaporator fan are operating simultaneously (cooling cycle) and when only the evaporator fan is operating.

17. Tests conducted on the air conditioner unit when installed on its mounting showed that the highest natural frequency of the system is 720 cpm. As indicated by Table I, the principal disturbance, for which isolation is required is the vibration caused by the compressor, which occurs at a frequency of 1,760 cpm. The frequency ratio in this case is 0.41, which is an acceptably low value.

18. Typical oscillograph recordings of transverse vibration of the test wall during operation of the air conditioner are shown in Fig. 6. The upper trace in the figure shows the increase in vibration of the wall above the ambient level when the compressor of the unit goes into operation. As noted on the trace, the amplitude of the vibration is less than 0.05 mil. This amplitude, at the particular frequency involved, is well below the threshold limit of human perception.

The lower trace of Fig. 6 shows a recording of wall vibration made with the unit in operation. The intermittent vibrations of larger amplitude are

(Continued on next page)

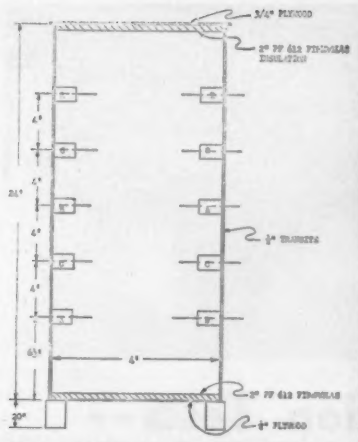

FIG. 7—Sketch of model shaft design (not to scale) shows dimension, materials, and location of 10 speaker units.

FIG. 8—Exterior view of the center and top sections of the model shaft.

Table I

Summary of the Component Amplitudes and Frequencies of Vibration Observed on the Air Conditioner with the Unit Supported on a Wooden Platform

Compressor and Evaporator Fan Operating Simultaneously	Frequency, cpm	Amplitude, mils
Vertical direction	1,140	0.14 - 0.2
	1,760	0.6 - 2.2
	3,520	0.06 - 0.13
	7,040	0.06 - 0.10
Lateral direction	1,760	0.6 - 0.65
Axial direction	1,760	2.4 - 5.0
Evaporator Fan Operating Only		
Vertical direction	1,760	0.2 - 0.25
Lateral direction	1,760	0.1 - 0.15
Axial direction	1,760	0.13 - 0.15

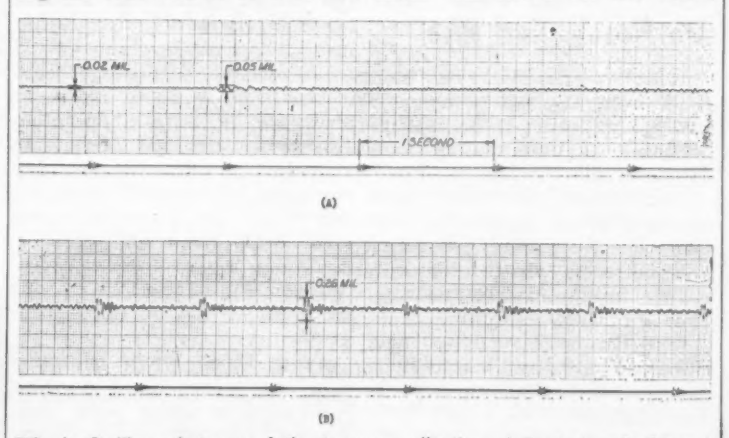

FIG. 6—Oscillograph traces of the transverse vibration of the test wall. Trace A shows the increase in vibration due to operation of the compressor. Trace B shows the vibration resulting from the disturbances caused by a person walking in the vicinity of the wall.

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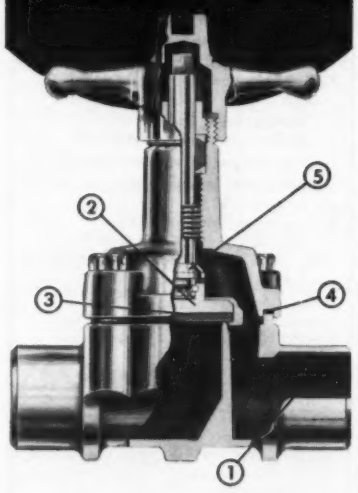

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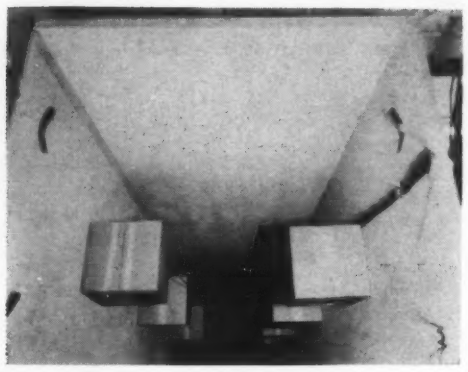

FIG. 9—Interior view of the model shaft shows arrangement of loudspeakers used to reproduce air conditioner noise.

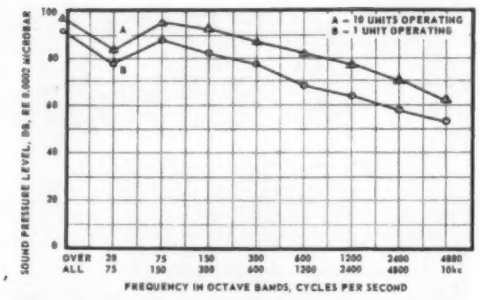
A – 10 UNITS OPERATING
B – 1 UNIT OPERATING
SOUND PRESSURE LEVEL, DB, RE 0.0002 MICROBAR
OVER ALL
20 75 150 300 600 1200 2400 4800
75 150 300 600 1200 2400 4800 10kc
FREQUENCY IN OCTAVE BANDS, CYCLES PER SECOND

FIG. 10—Average over-all and octave band levels of simulated air conditioning noise measured inside the model shaft.

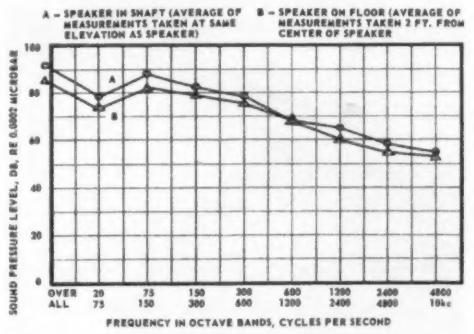
A – SPEAKER IN SHAFT (AVERAGE OF MEASUREMENTS TAKEN AT SAME ELEVATION AS SPEAKER)
B – SPEAKER ON FLOOR (AVERAGE OF MEASUREMENTS TAKEN 2 FT. FROM CENTER OF SPEAKER
SOUND PRESSURE LEVEL, DB, RE 0.0002 MICROBAR
OVER ALL
20 75 150 300 600 1200 2400 4800
75 150 300 600 1200 2400 4800 10kc
FREQUENCY IN OCTAVE BANDS, CYCLES PER SECOND

FIG. 11—Average over-all and octave band levels of one unit on floor and in shaft.

Sound, Vibration Tests--

(Continued from preceding page)

the result of transient disturbances caused by a man walking on the concrete floor in the proximity of the test wall. This recording provides a graphic illustration of the diminutive nature of the vibration created by operation of the air conditioner unit.

19. As previously pointed out, the construction of the test wall was such that it was considerably less rigid than would be the walls of the actual shaft in the apartment building. For this reason, the impulses that would be transmitted from the unit to the walls of the actual building shaft would create even smaller vibration amplitudes than those measured on the test wall.

Sound Studies—Procedure

20. To determine the probable magnitude of the noise levels that will exist within the living quarters, it was necessary to determine the over-all noise level that will exist in the shaft and the extent to which this noise will be attenuated by transmission through the concrete walls of the shaft. For this purpose the following information was required:

(a) The increase in noise due to operation of several units.

(b) The increase in noise due to reverberation.

(c) The attenuation due to transmission through concrete.

To obtain information on items (a) and (b), tests were conducted on a model shaft. Information for item (c) was obtained from published data on sound transmission loss of building materials.

21. The shaft model was 4 ft square in cross-section and 24 ft high. Walls of the shaft were made of ½-in. thick transite. Details of the shaft are shown in the sketch in Fig. 7. Exterior and interior views of the shaft are shown in the photographs in Figs. 8 and 9.

22. Air conditioning units were simulated in the shaft by means of 8-in. loudspeakers mounted in 12 by 12 by 12-in. cardboard boxes. Ten of these units were attached to opposite walls of the shaft in two vertical rows of five each as shown in Figs. 7 and 9.

23. Three tape recorders were set up and provided with tape loops transcribed from original recordings of noise from the air conditioner made in the Sound Laboratory of the American Blower Corp. Outputs of the three recorders, with tapes representing noise at three different locations around the actual unit, were distributed to the 10 speakers as shown in Fig. 7.

24. Measurements were made of noise levels inside the shaft for 1, 2, 4, 6, 8, and 10 units, all energized at the same input levels, to study the extent to which noise builds up under these conditions. To study the effects of reverberation within the shaft, noise measurements made on a unit mounted in the shaft were compared with measurements made on a similar unit positioned on the floor of a large room.

Sound Studies—Results and Discussion

25. Noise buildup inside the shaft for 10 units and one unit is shown in Fig. 10, for the over-all and octave band levels from 20 to 10,000 cycles per second. These results indicate that the over-all noise level was 6 db higher with 10 units than with one unit.

It was observed that noise buildup at any particular location is influenced principally by the nearest five units and that units more remote have little effect.

These results appear reasonable when it is considered that, theoretically, a tenfold increase in acoustic power from one source will increase the level by only 10 db. In the shaft, however, the sources are distributed at intervals of several feet which results in less buildup than if all the noise emanated from one location.

26. Effects of reverberation are shown in curves in Fig. 11. These curves show the average noise level from one unit when mounted in the shaft (measured at the same elevation as the unit) and the average noise level 2 ft from the center of the unit when mounted on a hard surface floor in an essentially free field. The same noise recording and power level were used in both tests. For these conditions, the average over-all level inside the shaft was 6 db higher than the level measured outside the shaft.

In the actual shaft, however, the average noise levels would be 7 db less than in the model shaft because of the increased wall and duct areas for noise absorption. It is therefore reasoned that the noise level inside the actual shaft will be approximately equal to the level measured on the unit located outside the model shaft (curve B of Fig. 11).

27. The lower curve in Fig. 12 shows the approximate over-all and octave band levels that are predicted on the outside of the actual shaft wall. These levels were determined as follows: The noise levels measured from one air conditioner were increased by 6 db to represent levels for 10 units in operation (top curve, Fig. 10). This is in accordance with the buildup measured in the model tests and represents the predicted noise level inside the shaft. No correction is applied for reverberation in this instance for reasons set forth in the previous paragraph.

From these levels transmission loss values for 6-in. thick reinforced concrete were subtracted, resulting in the lower curve in Fig. 12.

Also shown in Fig. 12 are the maximum noise criteria levels for sleeping quarters taken from published data. A comparison of these curves leads to the conclusion that the noise levels immediately outside the shaft will be within permissible limits.

Additional attenuation of noise by the walls of the mechanical room and other walls in the building should further reduce noise levels in the living quarters of the building considerably below maximum allowable levels.

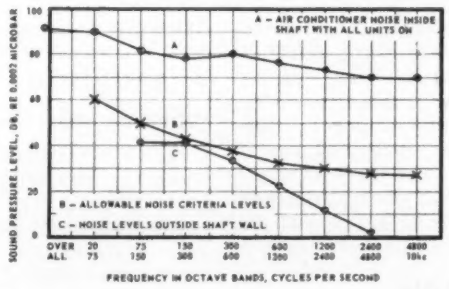
A – AIR CONDITIONER NOISE INSIDE SHAFT WITH ALL UNITS ON
B – ALLOWABLE NOISE CRITERIA LEVELS
C – NOISE LEVELS OUTSIDE SHAFT WALL
SOUND PRESSURE LEVEL, DB, RE 0.0002 MICROBAR
OVER ALL
20 75 150 300 600 1200 2400 4800
75 150 300 600 1200 2400 4800 10kc
FREQUENCY IN OCTAVE BANDS, CYCLES PER SECOND

FIG. 12—Predicted interior and exterior noise levels for actual units in actual concrete shaft and allowable noise criteria levels.

Bell & Gossett Names Joe Flasch, Carl Rice

MORTON GROVE, Ill.—Bell & Gossett Co. has announced two appointments in its Refrigeration & Air Conditioning Dept. of the Hydro-Flo Div.

Joe Flasch, previously sales manager of the department, has been named product manager and will be in charge of coordinating production, engineering, and sales activities.

Carl Rice was appointed field sales manager from his previous position as production application engineer.

The appointments were announced by Edward F. Ford, sales manager of the Hydro-Flo Div.

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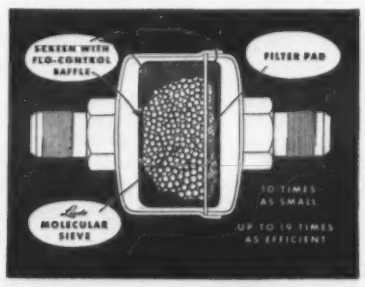

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Cooling Seen as Bright Spot In Economy

(Continued from Page 1, Col. 3)

up some 20% over the corresponding period of 1960.

It was pointed out that the growing trend toward construction of air conditioned low and medium-priced homes by speculative builders probably will contribute toward a steepening of the curve representing sales of this type of equipment.

Large "systems" installations, such as those used in big office buildings, industrial plants, hotels, apartments, stores, and similar multi-room structures, showed an increase of about 12% in 1960 over 1959. Total installed cost of these systems last year is estimated by ARI at $800,810,000, compared with $716,570,000 in the previous year.

With new construction of large buildings on the upswing in most cities of the nation, coupled with the fact that it is becoming virtually impossible to interest tenants in non-air conditioned office space, apartments, or other spaces where human comfort is a factor, it seems that this type of installation offers one of the greatest potential fields for expansion of the industry, the industry spokesman said.

In addition to office and apartment buildings, hospitals, and schools are increasing their use of air conditioning.

In the field of industrial and commercial refrigeration, growth has continued steadily as the demand for fresh and frozen food products has increased, and stores, warehouses, and packing facilities have expanded equipment for their handling.

Added to these everyday uses for refrigeration and air conditioning equipment are the many new applications being developed in industry, research, medicine, and national defense, it was noted.

"We believe that the '60's will bring about as great a change in America's living and working habits as did the '20's," Serfass said. "And much of the change will not only be accompanied, but made possible, by the products of the air conditioning and refrigeration industry.

"Fortunately, our industry already is geared to take advantage of this growth as it develops. Many of our plants have been adding capacity somewhat in excess of their current needs in anticipation of this growth, and have plans for further expansion as required. This is good industry planning.

"The ARI is sponsoring a movement to provide more trained installation, service, and maintenance men, which, we believe, is also good industry planning. We are ready to meet what we feel will be a decade of challenge.

"Although the sales trend has been favorable, the extreme competitive pressures have prevented development of an equally favorable profit trend. It is essential that the industry, through its individual members, spend more on research to overcome this cost-price squeeze. In order to do so it is hoped that the Federal government will give serious consideration to a tax benefit commensurate with the funds spent for research."

Industry's Galvanized Steel Use Up--

(Continued from Page 1, Col. 3)

and industrial air conditioning and ventilating equipment applications alone, according to AISI.

This figure amounted to 148,918 net tons, an 18% increase over 1959 and a 9% increase over 1958, the best previous year. The 1960 figure represents a five-fold increase over the early post-war years.

Not included are shipments for use in the manufacture of room air conditioners. The majority of these, according to the Committee of Galvanized Sheet Producers, have been redesigned in recent years to utilize increasingly large amounts of galvanized sheets.

Direct shipments to users in the field represent only a fraction of the galvanized sheet used, it was pointed out.

AISI estimates that the total air conditioning and ventilating market, including sheets purchased for use in commercial and industrial air conditioning and ventilating systems through warehouses and distributors for ductwork, consumes more than 750,000 net tons.

Tonnage shipped for plumbing, heating, and building hardware applications in 1960 amounted to more than 165,000 net tons, an 11% increase over 1959. The record tonnage of 166,110 net tons was shipped in 1956.

Total tonnage of all zinc-coated shipments in 1960 rose by 10% over 1959 to a record high of 3,056,996 net tons.

Room Unit Sales Top Last Year--

(Continued from Page 1, Col. 1)

vanced 19.7% compared with the same period of last year, the totals being 528,600 against 441,500. The latter figure includes revised unit figures of 69,800 for January, 1960, and 160,800 for February, 1960.

As previously reported, sales in January were 43% ahead of January, 1960, and those in February gained 33.6% compared with the same month a year earlier.

The NEMA figures are based upon expansion of data reported to the association's Statistical Dept. to cover total industry sales including exports.

Also as previously reported, air conditioner sales in several areas around the country were running ahead of year-ago periods.

Another such report, just received by the NEWS, shows that in the territory served by Kansas Gas & Electric Co., Wichita, dealer sales of room air conditioners in March totaled 144, compared to 142 in March, 1960. First-quarter sales were up 8.5%, the totals being 255 and 235.

Sales of central air conditioners in the same area rose to 46 in March from 40 a year earlier. In the first three months of 1961, dealers sold 101 central systems, a gain of 31.2% over the like 1960 period.

Room and central air conditioners, incidentally, were the only products except dehumidifiers listed in the KG&E report which did better in the first quarter than in the comparable period of last year. Sales of dehumidifiers rose to 61 from 4.

Another sales gain was reported by the Electric League of Southern California. According to the league's continuing study, sales in the first quarter of 1961 by distributors of air conditioners and heat pumps in the seven-county Los Angeles area rose to 13,433 units from 10,550 in the like year-ago period, an increase of 29.7%.

FHA on Certification Policy--

(Continued from Page 1, Col. 4)

in writing to the FHA insuring office having jurisdiction will be acceptable until Sept. 1, 1961, to give all concerned opportunity to affix proper labels to the equipment.

"This revision is effective immediately but will remain effective only until May 1, 1962. During this period we expect the industry to develop a testing and labeling program acceptable to FHA which will provide satisfactory assurance that each unitary air conditioning model conforms to the appropriate standard."

The "above" mentioned in "a" was the first sentence of paragraph 1004-5.1 which refers to the refrigeration system of summer air conditioning in the Minimum Property Requirements Standards. This sentence reads:

"Refrigeration systems and components shall comply with American Standard Safety Code for Mechanical Refrigeration, ASA B9.1 and the applicable standard of the Air-Conditioning & Refrigeration Institute (ARI)."

Some have questioned as to whether there are any "teeth" in the provisions of the Minimum Property Standards. It has been pointed out by officials that it is a felony, punishable through a criminal court action, to misrepresent facts to any agency of the Federal government.

A major question arising out of this latest FHA directive is that of what constitutes a "testing and labeling program acceptable to FHA which will provide satisfactory assurance that each unitary air conditioning model conforms to the appropriate standard."

Basis of participation in the ARI certification program, by contract between each participating manufacturer and ARI, consists of:

(1) Certification by the manufacturer that his models comply fully with ARI Standard 210 or 250; (2) Participation by the manufacturer in the random test program, at the independent testing laboratory under contract to ARI, with units for test selected from the open market by the ARI chief engineer; (3) testing of competitors' models, with results of all tests reported to the ARI chief engineer.

Other types of product testing programs used in other industries have involved what is generally called a "pre-certification method" whereby a prototype of each model to be certified is tested and rated, and certification is made that all units of such model produced by the manufacturer will perform within specified limits of the test and rating results.

Involved in the whole question of a testing and rating program are such matters as number of models involved, costs, and availability of independent facilities for testing. It is presumed that some method for an approach to developing a program satisfactory to FHA will be developed through meetings of manufacturers with FHA officials.

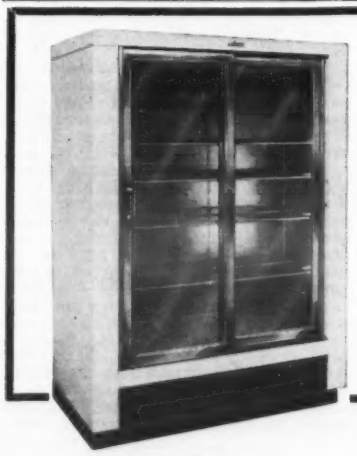
Augenstein--

(Continued from Page 1, Col. 5)

tioning units.

Augenstein is a director of the Air-Conditioning & Refrigeration Institute and chairman of its planning committee. He also is a trustee and member of the planning committee of the National Warm Air Heating & Air Conditioning Association and is a member of the Room Air Conditioner Section of the National Electrical Manufacturers Association and the Industry Advisory Committee of the National Housing Center.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.



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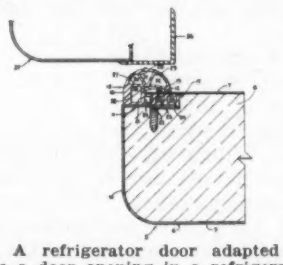
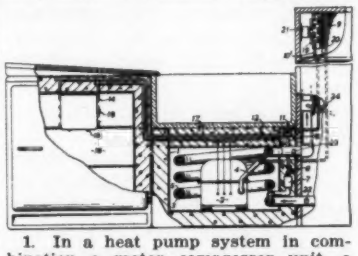
PATENTS *Week of Jan. 24*

2,968,845. REFRIGERATOR DOOR CONSTRUCTION. Jack R. Dickinson, North Claverack, N. Y., assignor to Foster Refrigerator Corp., Hudson, N. Y.



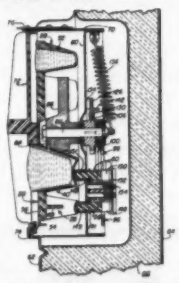
1. A refrigerator door adapted to close a door opening in a refrigerator and cooperate with a door frame surrounding the opening to provide a seal comprising an outer shell and an inner liner shaped to form a space therebetween, insulating material in said space, said shell having a flange projecting inwardly from its peripheral edge and said inner liner having a peripheral edge portion overlying the flange on the outer shell, a hollow tubular gasket of a resilient....

2,968,934. HEAT PUMP SYSTEMS. Mieczyslaw Komedera, High Wycombe, England, assignor to Heat Pump & Refrigeration Limited, London, England, a British company.



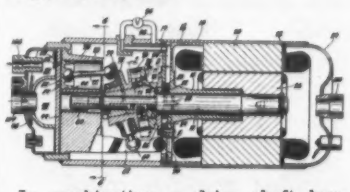
1. In a heat pump system in combination a motor compressor unit, a refrigerant condenser means connected to the outlet of said motor compressor unit, a water conducting means arranged to take up heat from refrigerant passing through said refrigerant condenser means, a main evaporator means connected with the inlet of the motor compressor, a main refrigerant line leading from said refrigerant condenser means to said main evaporator means, an insulated cabinet, a subsidiary evaporator means arranged within said insulated cabinet. . . .

2,968,935. ICE CUBE MAKING AND EJECTING APPARATUS. Leland K. Warrick, Western Springs, and Jack M. Bryant, Wheaton, Ill., assignors to General Electric Co.



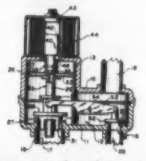
1. In combination, a refrigerator including walls defining a heat-insulated freezing compartment having a front opening, means for cooling said freezing compartment to a temperature below 32°F, and a front door including inner and outer walls disposed in spaced-apart relation and a layer of heat insulation therebetween, said front door cooperating with said freezing compartment front opening and movable between open and closed positions with respect thereto; an ice cube ejector carried by said front door and movable therewith and arranged in a cavity provided in said layer of heat insulation, said ejector comprising structure defining a chamber having a front opening through said inner wall of said front door and adapted to receive an ice tray. . . .

2,968,961. REFRIGERATING APPARATUS. Ralph McGregor, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



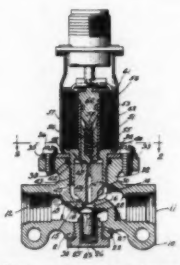
In combination, a drive shaft having an offset crank portion thereon, an end thrust bearing adjacent said offset crank portion and abutted thereby, driving means mounted on said crank portion, said driving means comprising a wobble plate and a wedge-shaped element rotatably support on the offset part of said crank portion, rings disposed one within the other in spaced apart concentric relationship and secured to said crank portion for rotation therewith about the axis of said offset part thereof, said wedge-shaped element engaging an edge of each of the rings and forming therewith and with said crank portion a chamber between said rings. . . .

2,969,067. VALVE MECHANISM. Estel C. Raney, Fort Lauderdale, Fla., assignor to Ranco, Inc., Columbus, Ohio.



1. A valve mechanism comprising a valve chamber having a fluid inlet and two outlet ports, one of which is cylindrical, a piston movable freely in said chamber and adapted to enter said cylindrical port and substantially close said port and to move thereinto by pressure differential between said chamber and one port, a valve member for closing the other of said ports, means interconnecting said piston and valve member to cause said piston to move said valve member from said second port when said piston moves into said cylindrical port, said means interconnecting said piston and valve member including a lost motion connection permitting movement of said piston in said chamber to said cylindrical port while said valve member is closed on its port, and means to move said piston from said port.

2,969,068. PILOT VALVE. Leo Kramer, Bensenville, Ill., assignor to Controls Co. of America, Schiller Park, Ill.

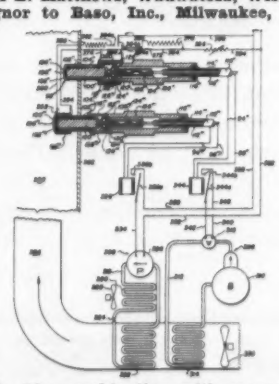


2. A pilot valve construction comprising a valve body having an inlet and outlet separated by a partition having a passage therethrough, said partition having a high pressure side communicating directly with the inlet, said body providing a cylindrical piston chamber at the high pressure side of the partition, a piston slidable in said chamber and having one end adjacent the high pressure side of the partition. . . .

2,969,127. AIR PURIFIER. Richard R. Cook, 2076 Elston Ave., Chicago, Ill.

In a device for providing warm or cold air having an air entrance duct, and means for moving the air, air purifying means in said air entrance duct comprising a plurality of filters arranged in side-by-side relation and a plurality of sets of collector plates arranged in series inwardly from said filters and a power pack connected to an electrical source of power for applying high voltage to alternate sets of collector plates, each of said filters having a central filter portion of expanded washable aluminum foil, and a metal frame surrounding the central portion, said filters adapted to remove heavy. . . .

2,969,224. TEMPERATURE RESPONSIVE CONTROL APPARATUS. Russell B. Matthews, Wauwatosa, Wis., assignor to Baso, Inc., Milwaukee, Wis.

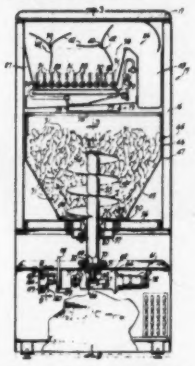


2. The combination with means defining a chamber, means for heating a medium within said chamber and

means for cooling said medium, of control means for both of said heating and said cooling means comprising a first thermoelectric generator having a first thermojunction subject to the temperature of said medium and having at least one second thermojunction, first electroresponsive control means having a predetermined actuating electrical energization value in circuit with said first generator and in controlling relation with said heating means, a second thermoelectric generator having a third thermojunction subject to the temperature of said medium and having a least one fourth thermojunction. . . .

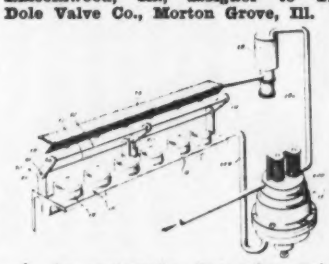
Week of Jan. 31

2,969,650. ICE MAKING AND VENDING MACHINE. William A. Eschenburg and William S. Taylor, Beloit, Wis., assignors to Yates-American Machine Co., Beloit, Wis.



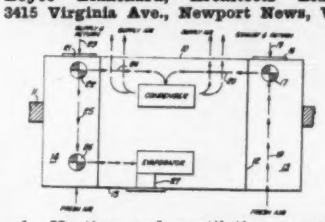
14. An ice particle storage and vending arrangement including a storage bin in which ice particles are accumulated for vending purposes, ice particle moving means in the form of a centrally positioned and vertically directed auger in said bin to impart circulatory-type motion to the ice particles therein to prevent coherence and fusion therebetween during storage, said storage bin being of substantially larger total area than that occupied by said auger therein to permit said circulatory-type motion, and ice particle vending means including a rotatable drum having an opening in the periphery thereof for alignment with a delivery opening in said bin for ice particle delivery purposes.

2,969,651. AUTOMATIC ICE MAKING APPARATUS. Carl C. Bauerlein, Lincolnwood, Ill., assignor to The Dole Valve Co., Morton Grove, Ill.



1. An automatic ice cube maker comprising a plurality of flexible invertible molds for receiving and holding water, a support carrying said molds, a scavenger bar mounted on said support for rotatable movement above said molds, means for turning said molds inside out to discharge frozen ice cubes therein. . . .

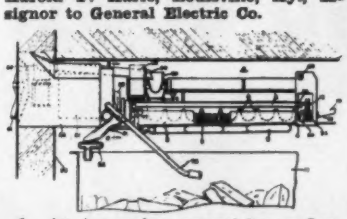
2,969,652. HEATING, VENTILATING AND COOLING UNIT. Winborne Boyce Blanchard, Architects Bldg., 3415 Virginia Ave., Newport News, Va.



1. Heating and ventilating apparatus for a room or like enclosure comprising a heat pump including a condenser section and an evaporator section each having a coil and a blower, means for recirculating selected adjustable proportions of return air from the room through said condenser section to heat the air by condensation of refrigerant in the condenser coil including means for entraining therewith selected, adjustable proportions of fresh outside air. . . .

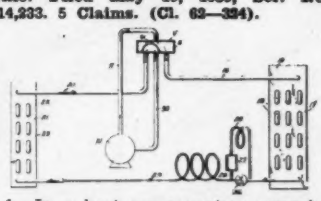
Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D. C.

2,969,654. AUTOMATIC ICE MAKER. Harold P. Harle, Louisville, Ky., assignor to General Electric Co.



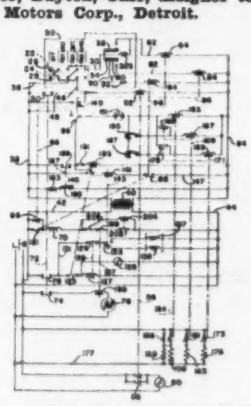
1. An ice maker comprising a flexible tray, means for supporting said tray for tilting movement thereof about an axis adjacent one side of said tray between a horizontal ice making position and a tilted ice ejecting position, drive means operably connected to one end of said tray for rotating said tray to said tilted position, said drive means including a drive shaft, an arm carried by said shaft, a cam pin on said arm, and a cam member connected to said tray. . . .

2,969,655. REVERSIBLE HEAT PUMP SYSTEM. James A. Salter, Fort Lauderdale, Fla., assignor to Ranco Inc., Columbus, Ohio, a corporation of Ohio. Filed May 19, 1959, Ser. No. 814,233. 5 Claims. (Cl. 62—324).



1. In a heat pump system comprising a refrigerant compressor and first and second coil type heat exchangers connected with the compressor in a refrigerating circuit and including means to selectively reverse the order of flow of refrigerant through the exchangers, means forming a refrigerant passage between said exchangers including a first restrictor. . . .

2,969,959. REFRIGERATING APPARATUS. Albert J. Kuhn and David D. Rector, Dayton, Ohio, assignor to General Motors Corp., Detroit.



Air conditioning apparatus including a first heat transfer unit exposed to outdoor air and a second heat transfer unit exposed to indoor air, motor compressor means for withdrawing refrigerant from one of said units and delivering it to the other unit, refrigerant flow control means connected between said units, a reversing valve connected between said units and said motor compressor means to cause either of said units to heat or cool, a source of electrical energy. . . .

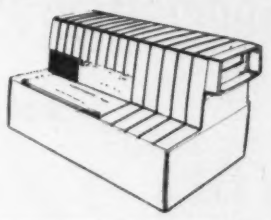
REISSUES

24,932. LIGHT METAL VANE FOR ROTARY COMPRESSORS. Paul H. Davey, Kent, Ohio, assignor of one-third to Paul H. Davey, Jr., and one-third to Joseph T. Myers. Original No. 2,905,376, dated Sept. 22, 1959, Ser. No. 711,830, Jan. 29, 1958. Application for reissue Mar. 4, 1960, Serial No. 12,886.

1. [A vane for sealing between the rotor and the stator of a rotary compressor comprising] **A vane for sealing between relatively rotatable generally cylindrical rotor and stator members having their axes parallel and eccentric comprising** a solid body of metal of low density and high heat conducting capacity, a thin abrasion-resisting coating covering said body and bonded thereto, and a outside thin smooth coating of self-lubricating material substantially bonded to said abrasion-resisting coating.

DESIGN

189,704. ROOM AIR CONDITIONERS. Roger Mark Singer, Queens, N. Y., assignor to Air-Shields, Inc., Hatboro, Pa.



A First for Certified and Dunham-Bush

OFFICIALS of Certified Refrigeration, Inc., Detroit, view newly arrived and uncrated Dunham-Bush 'PAC' Packaged Air Conditioner. Left to right are: Robert J. Crawford, president and general sales manager; William B. Anton, sales engineer; John Ellison, sales engineer; George V. Carless, vice president and district sales manager. Certified is first Dunham-Bush franchised distributor for Packaged Air Conditioners. The Certified sales personnel recently completed an intensive Dunham-Bush product indoctrination program.

First Exclusive Distributor Named for Dunham-Bush Packaged Air Conditioners

WEST HARTFORD, Conn. — Simultaneous with its announcement of a new marketing program centering around exclusive franchised distributors for packaged air conditioners, Dunham-Bush, Inc., revealed the appointment of its first distributor in the program, Certified Refrigeration, Inc., Detroit.

"Certified Refrigeration is one of the largest independent organizations handling air conditioning and refrigeration in the metropolitan Detroit area," it was pointed out. "The company's sales volume is in excess of one million dollars annually.

"In addition to handling sales, Certified Refrigeration will provide servicing, parts, drafting, estimating, and engineering facilities for dealers and contractors who are not equipped to handle these functions.

"The company's sales personnel recently completed intensive product indoctrination through Dunham-Bush technical education services.

"The Dunham-Bush Packaged Air Conditioner line being handled exclusively in Detroit by Certified Refrigeration, is designed for restaurants, stores, offices, clubs, banks, factories, and other places requiring 'packaged' cooling and heating."

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SALES MANAGER. Graduate engineer, 15 years' experience all phases air conditioning industry including residential, commercial and industrial. Proven sales and engineering management and administrative ability with major manufacturers. Interested in management position with aggressive manufacturer desiring maximum market penetration in growing West Coast market. BOX A6777, Air Conditioning, Heating & Refrigeration News.

GENERAL SALES manager — heating and air conditioning manufacturer, national distribution, residential, commercial, industrial products. Late 40's. Proven record of accomplishment, now employed, seeks challenging opportunity with sales-weak company. Same or related industry. BOX A6778, Air Conditioning, Heating & Refrigeration News.

SALES ENGINEER — Five years' successful engineering experience. Last three with top manufacturer of heating, ventilating, air conditioning and heat transfer equipment, calling on architects, engineers, contractors, industrials, dealers and wholesalers. Interested in position with management opportunity. Aggressive, conscientious. Age 30. Married. Will relocate. BOX A6779, Air Conditioning, Heating & Refrigeration News.

AMMONIA REFRIGERATION journeyman, operating engineer, maintenance or construction, ice plants, and other refrigeration and air conditioning. Also journeyman electrician, pipe fitter, welder, machinist and supervisor. BOX A6780, Air Conditioning, Heating & Refrigeration News.

POSITIONS AVAILABLE

SHAKER AIR CONDITIONING CO., 4294 Lee Road, Cleveland 28, Ohio has an immediate opening for experienced air conditioning service and installation mechanic for commercial and residential air conditioning. Steady work at $4.11 an hour.

WANTED — A first class commercial and industrial serviceman capable of quickly becoming manager of service department. Must have some sales ability in order to sell replacements and parts. Salary or commission commensurate with ability. Reply to BOX 1442, Harlingen, Texas.

REFRIGERATION ENGINEERS — Juniors, experienced testing out, drawing conclusions and making recommendations. Some design and development background desired. Seniors, experienced in all phases of developmental work preferably in the fractional horsepower range. Salary open, progressive management, excellent benefit program with leading commercial refrigerator manufacturer located 30 miles south of Albany, New York. Write fully and in confidence, stating experience and salary required to: BOX A6772, Air Conditioning, Heating & Refrigeration News.

EQUIPMENT FOR SALE

BRAND NEW icemaker pump motor and impeller repair kits for Scotsman Carrier $18.00 at Kesco wholesalers coast to coast. Bronze replacement icemaker pumps for York Carrier $29.95. Hose connection adaptors for York Carrier $1.00. Complete line condensate pumps from 10' to 50' head, 115-208-230 volts. Catalog. KESCO, Jamaica 13, N. Y.

ATTIC INSTALLATION kits for 2 and 3 ton air conditioning units consisting of aluminum fiberglass duct work, ceiling outlets and return air grilles. Special closeout prices. STANDARD AIR SERVICE CO., 1235 S. Wabash, Chicago, Illinois, HA 7-4567.

ATTENTION REFRIGERATION Servicemen. Send for catalog listing values in refrigeration and air conditioning parts, relays, capacitors, compressors. Savings up to 50%. WALTER W. STARR, 2833 Lincoln Ave., Chicago 13, Illinois.

BUSINESS OPPORTUNITIES

WANTED — DISTRIBUTORS, dealers, agents, for our different circulating water treatment, Air-Con Emulsion Sand-Banum — The simple, safest method of keeping scale, rust and corrosion out of open type circulating systems. Removes scale and rust already present. Excellent discounts available. Write for information. Air-Con can add to your profits through repeat sales! AMERICAN SAND-BANUM COMPANY, INC., P. O. Box 4, Merrick, New York.

MISCELLANEOUS

"AUTOMATIC REFRIGERATION" by S. A. Andersen reviews refrigeration theory and practice. Fully illustrated. Filled with essential tables, charts, weather data, etc. 649 pages. $13.50. Order from BUSINESS NEWS PUBLISHING CO., Dept. B, 450 W. Fort, Detroit 26, Mich.

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FROM RECOGNIZED WHOLESALERS ONLY

IMPORTANT MAIL FOR V.I.P.'s

Recently, wholesalers received several important communications from Dunham-Bush announcing a drastic change in distribution policies. Effective February 1, 1961, all orders for hot water specialties, A-5 and A-9 centrifugal pumps and four and six inch converters **must** go through recognized heating, air conditioning and refrigeration wholesalers.

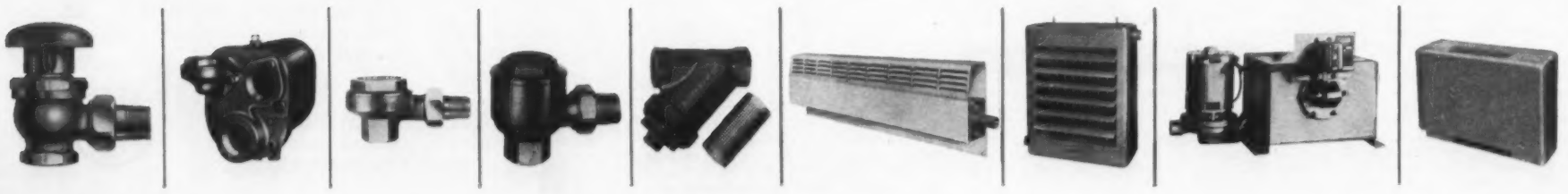
Dunham-Bush, is shooting the works to make this new policy profitably successful in your, the wholesalers', behalf. The complete package has been sent to you including price lists, discount information, etc.

At last a major brand, long-line manufacturer has teamed up with wholesalers and the response has been tremendous. Your analysis of Dunham-Bush wholesale policy mailings will demonstrate that here are highest quality brass goods at lower prices; pumps with ratings and performance that can't be matched; stellar performing steam converters backed by over 50 years of Dunham-Bush heat transfer experience.

IF you haven't acted yet, **IF** these mailings have missed your desk, then by all means contact Department HP, Dunham-Bush, Inc., 179 South Street, West Hartford, Conn.

AND MORE "SALES-SOCK" STOCKING OPPORTUNITIES

Heating and refrigeration wholesalers may also selectively stock other "one source—one responsibility" Dunham-Bush products. These include: steam specialties, unit heaters, condensate pumps, radiation, baseboard, cooling/heating units, etc. All are choice wholesaler items.

DUNHAM-BUSH

DUNHAM-BUSH, INC.
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